Project Manual
Volume 1 of 2
Divisions 00-14

PELHAM UNION FREE SCHOOL DISTRICT
314 Pelhamdale Avenue, Pelham, New York 10803

INFRASTRUCTURE IMPROVEMENTS

SIWANOY ELEMENTARY SCHOOL
489 Siwanoy Pl, Pelham, NY 10803 SED Control No. 66-16-01-03-0-004-014

12 November 2026 **ISSUE FOR BID**

ARCHITECT
KG+D Architects, PC
285 Main Street, Mount Kisco, NY 10549
914.666.5900 www.kgdarchitects.com

STRUCTURAL ENGINEERS
The DiSalvo Engineering Group
93 Lake Avenue, Danbury, CT 06810
203.490.4140

MEP ENGINEERS
OLA Consulting Engineers, PC
100 Summit Lake Drive, Suite 102, Valhalla, NY 10595
914.747.2800

CIVIL ENGINEERS
THE LA GROUP
330 East State St. Ithica, NY 14850
604.277.4000

ABATEMENT CONSULTANT
WSP USA, Inc.
One Penn Plaza, 4th Floor, New York, NY 10119
212.465.5000

ROOFING CONSULTANT
Watsky Associates
20 Madison Avenue, Valhalla, NY 10595
914.948.3450

SPECIFICATIONS
Susan B. McClymonds
200 Robb Rd., Amsterdam, NY 12010
518.843.4054

THE UNDERSIGNED CERTIFIES THAT TO THE BEST OF HIS KNOWLEDGE, INFORMATION AND BELIEF, THE PLANS AND SPECIFICATIONS ARE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE, THE STATE ENERGY CONSERVATION CONSTRUCTION CODE, AND BUILDING STANDARDS OF THE EDUCATION DEPARTMENT, AND THAT THE PLANS AND SPECIFICATIONS REQUIRE THAT NO ASBESTOS CONTAINING MATERIAL SHALL BE USED.

TABLE OF CONTENTS

VOLUME 1

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

001000	ADVERTISEMENT FOR BIDS
002000	INSTRUCTIONS TO BIDDERS
003000	INFORMATION AVAILABLE TO BIDDERS
	Attachment: Hazardous Material Report
	Attachment: Geotechnical Report
004010	BID FORM CONTRACT NO. 1 – GENERAL CONSTRUCTION WORK
004020	BID FORM CONTRACT NO. 2 – PLUMBING WORK
004030	BID FORM CONTRACT NO. 3 – HVAC WORK
004040	BID FORM CONTRACT NO. 4 – ELECTRICAL WORK
004050	BID FORM CONTRACT NO. 5 – FIRE PROTECTION WORK
004100	IRAN DIVESTMENT ACT CERTIFICATE OF COMPLIANCE
004110	NON-COLLUSION AFFIDAVIT
004200	SEXUAL HARASSMENT POLICY AND TRAINING CERTIFICATION
004300	BID BOND - AIA DOCUMENT A310 -2010
004500	STATEMENT OF BIDDER'S QUALIFICATIONS - AIA DOCUMENT A305 - 2020
004501	EXHIBIT A TO AIA DOCUMENT A305 – GENERAL INFORMATION
004502	EXHIBIT B TO AIA DOCUMENT A305 – FINANCIAL AND PERFORMANCE INFORMATION
004503	EXHIBIT C TO AIA DOCUMENT A305 – PROJECT SPECIFIC INFORMATION
004504	EXHIBIT D TO AIA DOCUMENT A305 – CONTRACTOR'S PAST PROJECT EXPERIENCE
004505	EXHIBIT E TO AIA DOCUMENT A305 – CONTRACTOR'S PAST PROJECT EXPERIENCE, CONTINUED
004600	LABOR LAW 220-i CERTIFICATION FORM
005000	OWNER-CONTRACTOR AGREEMENT – AIA DOCUMENT A132 - 2019
006110	PERFORMANCE BOND – AIA DOCUMENT A312 – 2010
006120	PAYMENT BOND – AIA DOCUMENT AIA 312 – 2010
007000	GENERAL CONDITIONS OF THE CONTRACT – AIA DOCUMENT A232 - 2019
008700	WAGE RATE SCHEDULES
	Attachment: Wage Rate Acceptance Page

DIVISION 01 - GENERAL REQUIREMENTS

011000	SUMMARY
	Attachment: Project Milestone Schedule
011011	REGULATIONS OF THE COMMISSIONER OF EDUCATION - 8 NYCRR 155.5 - UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS
012100	ALLOWANCES
012200	UNIT PRICES
012300	ALTERNATES
012500	SUBSTITUTION PROCEDURES
	Attachment: Substitution Request Form
012600	CONTRACT MODIFICATION PROCEDURES

012900 PAYMENT PROCEDURES
Attachment: Partial Waiver of Liens Form
Attachment: Final Waiver of Liens Form
Attachment: Payroll Certification Form
013100 PROJECT MANAGEMENT AND COORDINATION
Attachment: Request for Information (RFI) Form
013115 COORDINATION DRAWINGS
013200 CONSTRUCTION PROGRESS DOCUMENTATION
013233 PHOTOGRAPHIC DOCUMENTATION
013300 SUBMITTAL PROCEDURES
Attachment: Submittal Cover Sheet
Attachment: Contractor Request for Electronic Drawing Files
014000 QUALITY REQUIREMENTS
014100 SPECIAL INSPECTIONS AND TESTS
Attachment: Special Inspection Non-Conformance Report Form
Attachment: SED Statement of Special Inspections and Tests
014200 REFERENCES
015000 TEMPORARY FACILITIES AND CONTROLS
015719 ENVIRONMENTAL PROTECTION DURING CONSTRUCTION
015723 TEMPORARY EROSION AND SEDIMENT CONTROL
Attachment: SWPPP Report
016000 PRODUCT REQUIREMENTS
017300 EXECUTION
017329 CUTTING AND PATCHING
017419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
017700 CLOSEOUT PROCEDURES
Attachment: Certification of Drawing and Specification Compliance
017823 OPERATION AND MAINTENANCE DATA
017839 PROJECT RECORD DOCUMENTS
017900 DEMONSTRATION AND TRAINING

DIVISION 02 - EXISTING CONDITIONS

020810 ASBESTOS ABATEMENT
024119 SELECTIVE STRUCTURE DEMOLITION AND REMOVALS

DIVISION 03 – CONCRETE

031000 CONCRETE FORMING AND ACCESSORIES
032000 CONCRETE REINFORCEMENT
033000 CAST IN PLACE CONCRETE
035416 HYDRAULIC CEMENT UNDERLAYMENT

DIVISION 04 - MASONRY

040100 MASONRY MAINTENANCE

040120 MASONRY RESTORATION
042000 UNIT MASONRY
044100 STONE MASONRY VENEER
047200 CAST STONE
047210 ARCHITECTURAL CAST STONE REPLACEMENT
049300 MASONRY CLEANING

DIVISION 05 - METALS

051200 STRUCTURAL STEEL
053100 STEEL DECKING
054000 COLD-FORMED METAL FRAMING
054400 COLD-FORMED METAL TRUSSES
055000 METAL FABRICATIONS
055200 EXTERIOR METAL RAILINGS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

061000 ROOF CARPENTRY
061053 MISCELLANEOUS ROUGH CARPENTRY
061643 GYPSUM SHEATHING
062013 EXTERIOR FINISH CARPENTRY
064020 INTERIOR ARCHITECTURAL WOODWORK
064023 EXTERIOR ARCHITECTURAL WOODWORK
066116 SOLID SURFACE MATERIAL FABRICATIONS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

071326 SELF-ADHERING SHEET WATERPROOFING
072100 THERMAL INSULATION
072419 WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)
072726 FLUID-APPLIED MEMBRANE AIR AND MOISTURE BARRIERS
073113 ASPHALT SHINGLES
074213.53 COMPOSITE METAL WALL AND SOFFIT PANELS
075323 ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING
076200 SHEET METAL FLASHINGS AND SPECIALTIES
077200 ROOF ACCESSORIES
078100 APPLIED FIRE PROTECTION
078123 INTUMESCENT FIREPROOFING
078413 PENETRATION FIRESTOPPING
078446 FIRE-RESISTIVE JOINT SYSTEMS
079200 JOINT SEALANTS
079500 EXPANSION CONTROL

DIVISION 08 - OPENINGS

081113 HOLLOW METAL DOORS AND FRAMES
081416 FLUSH WOOD DOORS
081433 STILE AND RAIL WOOD DOORS
082250 POLYESTER FACED DOORS AND ALUMINUM FRAMING
083113 ACCESS DOORS AND FRAMES
083450 ELEVATOR DOOR SMOKE CONTAINMENT SYSTEM
085113 ALUMINUM WINDOWS
087100 DOOR HARDWARE
088000 GLAZING
089000 LOUVERS AND VENTS

DIVISION 09 - FINISHES

092100 GYPSUM PLASTERING
092116.23 GYPSUM BOARD SHAFT WALL ASSEMBLIES
092150 GYPSUM PLASTER REPAIR AND RESTORATION
092216 NON-STRUCTURAL METAL FRAMING
092800 GLASS-REINFORCED GYPSUM FABRICATIONS
092900 GYPSUM BOARD
093100 CERAMIC TILING
095113 ACOUSTICAL PANEL CEILINGS
095119 ACOUSTICAL BOARD CEILING PANELS
096400 WOOD FLOORING
096460 WOOD FLOORING REFINISHING
096500 RESILIENT FLOORING AND ACCESSORIES
096813 TILE CARPETING
097200 WALL COVERING
097750 FIBERGLASS REINFORCED PLASTIC PANELS
098413 ACOUSTICAL WALL PANELS
099100 PAINTING

DIVISION 10 - SPECIALTIES

101000 VISUAL DISPLAY SURFACES
101200 DISPLAY CASES
101400 SIGNAGE
102113 TOILET COMPARTMENTS
102123 CUBICLE CURTAINS AND TRACKS
102600 WALL AND DOOR PROTECTION
102800 TOILET AND BATH ACCESSORIES
105200 FIRE PROTECTION SPECIALTIES
105213 AUTOMATED EXTERNAL DEFIBRILLATOR (AED) SPECIALTIES

DIVISION 11 – EQUIPMENT

114900 GYMNASIUM EQUIPMENT
116800 PLAY EQUIPMENT AND STRUCTURES

DIVISION 12 - FURNISHINGS

122413 ROLLER WINDOW SHADES

DIVISION 13 – SPECIAL CONSTRUCTION

133123 TENSIONED FABRIC STRUCTURE

DIVISION 14 – CONVEYING SYSTEMS

142100 ELECTRIC TRACTION ELEVATORS

VOLUME 2

DIVISION 21 - FIRE SUPPRESSION

210500 COMMON WORK RESULTS FOR FIRE PROTECTION PIPING
210517 SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING
210518 ESCUTCHEONS FOR FIRE-SUPPRESSION PIPING
210523 GENERAL-DUTY VALVES FOR WATER-BASED FIRE-SUPPRESSION PIPING
210529 HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING AND EQUIPMENT
210553 IDENTIFICATION FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT
211119 FIRE-DEPARTMENT CONNECTIONS
211313 WET-PIPE SPRINKLER SYSTEMS

DIVISION 22 – PLUMBING

220500 COMMON WORK RESULTS FOR PLUMBING
220513 COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT
220517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING
220518 ESCUTCHEONS FOR PLUMBING PIPING
220519 METERS AND GAGES FOR PLUMBING PIPING
220523 GENERAL-DUTY VALVES FOR PLUMBING PIPING
220529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
220553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
220719 PLUMBING PIPING INSULATION
221114 FACILITY NATURAL-GAS AND PROPANE GAS PIPING

221116 DOMESTIC WATER PIPING
221119 DOMESTIC WATER PIPING SPECIALTIES
221123.21 INLINE, DOMESTIC-WATER PUMPS
221316 SANITARY WASTE AND VENT PIPING
221319 SANITARY WASTE PIPING SPECIALTIES
221413 FACILITY STORM DRAINAGE PIPING
221423 STORM DRAINAGE PIPING SPECIALTIES
221429 SUMP PUMPS
223400 FUEL-FIRED, DOMESTIC-WATER HEATERS
224213.13 COMMERCIAL WATER CLOSETS
224213.16 COMMERCIAL URINALS
224216.13 COMMERCIAL LAVATORIES
224216.16 COMMERCIAL SINKS
224716 PRESSURE WATER COOLERS

DIVISION 23 – MECHANICAL

230500 COMMON WORK RESULTS FOR HVAC
230513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
230517.5 SLEEVES AND ESCUTCHEONS FOR HVAC PIPING
230519 METERS AND GAGES FOR HVAC PIPING
230523.10 VALVES FOR HVAC PIPING
230529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT
230553 IDENTIFICATION FOR HVAC PIPING EQUIPMENT
230593 TESTING, ADJUSTING, AND BALANCING FOR HVAC
230713 HVAC DUCTWORK INSULATION
230719 HVAC PIPING INSULATION
230800 COMMISSIONING OF HVAC
230901 DIRECT DIGITAL CONTROLS
230993 SEQUENCE OF OPERATIONS
232113 HYDRONIC PIPING
232116 HYDRONIC PIPING SPECIALTIES
232123 HYDRONIC PUMPS
232513 WATER TREATMENT FOR CLOSED-LOOP HYDRONIC SYSTEMS
232913 VARIABLE FREQUENCY DRIVES
233113 METAL DUCTS
233300 AIR DUCT ACCESSORIES
233423 HVAC POWER VENTILATORS
235123 LISTED SPECIAL GAS VENTS
235216 CONDENSING BOILERS
236200 PACKAGED COMPRESSOR AND CONDENSER UNITS
236611 PACKAGED OUTDOOR AIR TO WATER PUMPS
237223.13 PACKAGED INDOOR HEAT WHEEL ENERGY RECOVERY UNITS
237313.16 CUSTOM AIR HANDLING UNITS
237433 DEDICATED OUTDOOR AIR UNITS
238219 FAN COIL UNITS
238236 FINNED-TUBE RADIATION
238239.16 PROPELLER UNIT HEATERS

DIVISION 26 – ELECTRICAL

260519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
260533 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
260544 SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING
260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS
260923 LIGHTING CONTROL DEVICES
262413 SWITCHBOARDS
262416 PANELBOARDS
262713 ELECTRICITY METERING
262726 WIRING DEVICES
262813 FUSES
262816 ENCLOSED SWITCHES AND CIRCUIT BREAKERS
263100 PHOTOVLOTAIC SYSTEM
264313 SURGE PROTECTION FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS
265119 LED INTERIOR LIGHTING
265219 EMERGENCY AND EXIT LIGHTING
265619 EXTERIOR LIGHTING

DIVISION 27 – COMMUNICATIONS

270528 PATHWAYS FOR COMMUNICATIONS SYSTEMS
270553 IDENTIFICATION FOR COMMUNICATIONS SYSTEMS
271513 COMMUNICATIONS COPPER HORIZONTAL CABLING

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

280513 CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY
280526 GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY
284621.11 ADDRESSABLE FIRE-ALARM SYSTEMS

DIVISION 31 – EARTHWORK

311000 SITE CLEARING
312000 SITE EARTHWORK
312316 ROCK REMOVAL

DIVISION 32 – EXTERIOR IMPROVEMENTS

321216 ASPHALY PAVING

321313 PORTLAND CEMENT
321400 UNIT PAVING
321816 PLAYGROUND PROTECTIVE SURFACING
323113 CHAIN LINK FENCE
323223 SEGMENTAL RETAINING WALLS
32330 SITE FURNISHINGS
329200 TURF
329300 LANDSCAPE PLANTS
329313 PLANTING SOILS

DIVISION 33 - UTILITIES

331000 WATER DISTRIBUTION
333000 SANITARY SEWER SYSTEM
334100 STORM DRAINAGE SYSTEM
334600 SUBDRAINAGE

DIVISIONS 34 – 49 – not used

END OF TABLE OF CONTENTS

ADVERTISEMENT FOR BIDS

PELHAM UNION FREE SCHOOL

314 Pelhamdale Avenue, Pelham, NY, 10803

The Pelham Union Free School District will receive individual sealed proposals at the *Business Office, 314 Pelhamdale Avenue, Pelham, NY, 10803*, for the project identified below. All proposals that have been received in accordance with the terms hereof will be opened and read aloud at the time and place of the Bid Opening.

ADDITIONS & ALTERATIONS
at
SIWANOY ELEMENTARY SCHOOL
489 Siwanoy Place, Pelham, NY 10803
SED Control No. 66-16-01-03-0-003-016

Documents Available to Bidders:	**November 12, 2026, after 5pm**
Pre-Bid Site Meeting:	**November 23 2026 3:30 PM**
Bid Opening:	**December 15 2026, 11:00 AM**

The District invites bidders to bid on the work described in the Bid Documents that falls within the following bid package:

Bid Package	**Trade**
1	General Construction
2	Plumbing
3	Mechanical
4	Electrical
5	Fire Protection

Complete sets of Bidding Documents, which include Drawings, Specifications and Addenda from Biddy (formerly known as REVplans). Complete digital sets of Bidding Documents may be examined free of charge or downloaded at the following website: revplans.biddyhq.com. Bidders are required to register to ensure receipt of all necessary information, including Bid Addenda. The fee to download digital files is $100.00. Click the Purchase button on the project's page to choose Digital Only, Hard Copy Only or Both. Costs for documents and shipping/handling are non-refundable. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs.

Please note Biddy (revplans.biddyhq.com) is the designated location and means for distributing all bid package information. Biddy takes no responsibility for the accuracy or completeness of Bidding Documents obtained from other sources. Obtaining Bidding Documents through Biddy enables a prospective bidder to be identified as a registered plan holder. All Bid Addenda issued after initial document download will be transmitted to registered plan holders via email and will be available at revplans.biddyhq.com. Plan holders who have paid for hard copies of the Bidding Documents may coordinate directly with Biddy if hard copies of Bid Addenda are needed.

All bidders are urged to attend the site meeting. Knowledge of the field conditions is crucial to understanding the Work.

Any proposal must be accompanied by a certified check payable to the Pelham Union Free School District or by a Bid Bond for a sum equal to five percent (5%) of the bid, conditioned as set forth in the Instructions to Bidders. All bid security, except those of the three low bidders will be returned after

formal analysis and evaluation of the Bids received. The bid security provided by the three low bidders will be returned after the execution of the Trade Contract. Forty-five (45) days after the opening of bids, if the bidder has not received notice of contract award, upon bidder's request, the bid security will be returned.

The District will require the successful bidder to provide separate Performance and Labor & Materials Payment Bonds in the amount of the contract price and in the form specified in the Bid Documents. As required by Section 222 of the New York Labor Law, the District will require each contractor and subcontractor performing work on the Project to participate in apprentice training programs in the trades of work it employs, which programs must have been approved by the New York State Department of Labor for not less than three (3) years and must have at least one apprentice currently enrolled in the training program.

The successful bidder shall be required to comply with the provisions of the New York State Prevailing Wage Law. Information can be obtained at
https://www.labor.ny.gov/workerprotection/publicwork/PWContents.shtm

Please note that certified payroll must be submitted with all invoices. Invoices will not be processed if the certified payroll is not provided. The Contractor must comply with all applicable Federal regulations as described in the bid documents. Attention is called to the fact that not less than the minimum salaries and wages as set forth in the specifications, or the latest revision thereof, must be paid on this project. The Contractor must comply with the "Equal Opportunity for Employment" requirements as promulgated by the Federal and State governments and as described in the bid documentation.

All proposals shall be sealed and in an envelope that is distinctly marked on the outside as follows:

Pelham Union Free School District
Siwanoy Elementary Additions & Alterations
December 15, 2026, 11:00 AM
Bid Package & Trade
Name of Bidder
Marked "SEALED BID"

Any bid proposal must be delivered to the **District Business Office, 314 Pelhamdale Avenue, Pelham, NY, 10803, to Jim Hricay, Assistant Superintendent for Business**, or his designee, no later than the appointed time on the bid opening date. The District will not open or consider any proposal unless it is received at that location no later than the appointed time on the bid opening date. Bidders are solely responsible for the arrival of each bid proposal at the place of bid opening by the appointed time, regardless of the means of delivery.

To the fullest extent allowed by law, the District reserves the right to reject all bids, to re-advertise for new bids, to reject any bid that contains an omission(s), an exception(s) or a modification(s), or in its sole discretion to waive what it deems to be an informality or irregularity in the bidding process, to waive what it deems to be an informality, irregularity, omission or technical defect with respect to a specific bid proposal received and to afford any Bidder an opportunity to remedy any informality or irregularity if it is in the School District's interest to do so.

END OF ADVERTISEMENT

INSTRUCTIONS TO BIDDERS

To be considered, Bids must be made in accordance with these Instructions to Bidders.

1. PROJECT DESCRIPTION

The Project consists of performing additions and alternations work at the Siwanoy Elementary School for the Pelham Union Free School District as shown on the Contract Drawings and described in the Specifications.

1. The scope of the Work of this project includes restoration of the exterior masonry facade of the building, window replacement, site improvements including new play areas, interior renovations, new elevators, and upgrades to the MEP systems in the existing building, and a new addition to the existing building.
2. The Work will be performed at the Siwanoy Elementary School located at 489 Siwanoy Place, Pelham, New York 10803.

2. TYPE OF CONTRACTS

The Work of this Project will be let in five (5) Prime Contracts as follows:

1. Contract No. 1 - General Construction Work
2 Contract No. 2 - Plumbing Work
3. Contract No. 3 - HVAC Work.
4. Contract No. 4 - Electrical Work
5. Contract No. 5 - Fire Protection Work.

Responsibilities assigned to each separate Prime Contractor and the scope of the Work included in each contract is clearly identified in the Specifications and on the Drawings.

3. TIME SCHEDULE

It is the intent of the Owner to award the Contracts for the Work on or about two (2) weeks after receipt of bids. Immediately upon receipt of Notice of Award of Contract from Owner, Contractors shall begin preparing required bonds, insurance certificates and other required submittals. Work may be performed at the site only upon receipt of written authorization (Notice to Proceed) from Owner and after the approval of the required submissions.

The anticipated Notice to Proceed/start of construction date is as indicated in the Project Milestone Schedules included at the end of Section 011000 “Summary.”

The Work shall be Substantially Complete on or before the date(s) indicated in the Project Milestone Schedules included at the end of Section 011000 “Summary.” It is extremely important that the Owner assume its full use of the buildings and sites on the completion date(s) specified.

4. QUALIFICATIONS OF BIDDERS

The Owner may make such investigation as it deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work. The Owner reserves the right to disqualify any prospective bidder or to reject any bid.

5. DOCUMENTS

Bidders may obtain the Bid Documents on Thursday, November 12, 2026 after 5:00 PM, from REVplans, 28 Church Street, Unit 7, Warwick, NY 10990; 845-651-3845. Complete digital sets of Bidding Documents may be examined, free of charge, or obtained online as a download at the following website: revplans.biddyhq.com. The fee to download digital files is $100.00. Click the Purchase button on the project's page to choose Digital Only, Hard Copy Only or Both. Costs for documents and shipping/handling are non-refundable. All bidders are urged to register to ensure receipt of all necessary information, including Bid Addenda.

Please note REVplans (revplans.biddyhq.com) is the designated location and means for distribution of all bid package information. REVplans takes no responsibility for the accuracy or completeness of Bidding Documents obtained from other sources. Obtaining Bidding Documents through REVplans enables a prospective bidder to be identified as a registered plan holder. All Bid Addenda will be transmitted to registered plan holders via email and will be available at (revplans.biddyhq.com). Plan holders who have paid for hard copies of the Bidding Documents may coordinate directly with REVplans if hard copies of Bid Addenda, if needed

6. EXAMINATION

Bidders shall carefully examine the Bid Documents and the existing site(s) to obtain first-hand knowledge of existing conditions and to verify conditions under which work will be performed. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the construction set forth in his bid. Submission of a Bid will be considered conclusive evidence that a bidder has visited the site and is conversant with local facilities and difficulties, the requirements of the Contract Documents, applicable laws and codes, the state of labor and material markets, and has made due allowance in his bid for all contingencies that may arise, whether or not stated.

7. QUESTIONS

Should a bidder find discrepancies in, or omissions from the drawings or any Contract Documents, or should he be in doubt, as to their meaning, or should he find provisions of any law or applicable code conflicting with provisions of the Contract Documents, he shall at once notify the Architect in writing, who will endeavor to issue the necessary clarifications or revisions to prospective bidders by means of an Addendum. Such Addendum, as part of the Contract Documents, shall be binding on all bidders. It shall be the duty of each bidder to make certain that he has received or provided himself with copies of all Addenda. Bids will be conclusively presumed to be based upon all Addenda issued up to the time of the opening of Bids, regardless of whether or not a copy of each Addendum is actually in the possession of the bidder

Prospective bidders may request clarifications of the Bid Documents from the Architect by contacting Sarah Davis at KG + D Architects, PC, via e-mail to sdavis@kgdarchitects.com All questions must be submitted in writing, no phone calls will be accepted. All correspondence must be addressed to subject line “Pelham Union Free School District Additions and Alterations at Siwanoy Elementary School".

Inquiries received over the phone will not be answered. All information will be relayed to bidders by written addenda. Neither the Owner nor the Architect will be responsible for any oral instruction or clarification to any persons whatsoever. Questions received less than five (5) business or working days prior to the bid opening date cannot be answered.

If a bidder, prior to submitting a Bid, fails to give notification to the Architect of the existence of any such discrepancies, omissions, ambiguities, errors, or conflicts, he shall comply with the interpretations or directions given by the Architect in resolving same, without claiming extra costs

8. INTERPRETATION OF BID DOCUMENTS

If, in the interpretation of Bid Documents, requirements within the Drawings and Specifications conflict, or it appears that the Drawings and Specifications are not in agreement, the Contractor shall base his bid on (1) the greater quantity, where there is a discrepancy in quantity; and (2) the superior quality, where there is a discrepancy in quality.

9. PRE-BID MEETING

A pre-bid meeting will be held on_Monday, November 23, 2026 at 3:30 PM at the main entrance to the Siwanoy Elementary School located at 489 Siwanoy Place, Pelham, New York 10803 Attendance at the prebid meeting is not mandatory for submitting a bid but is strongly encouraged.

10. PREPARATION OF BIDS

Each Bid must be completed in duplicate on the applicable Bid Form(s) provided herein. All blank spaces must be filled in with ink in both words and figures. Erasures or other changes in a proposal must be explained or noted over the signature of the bidder. The Bid shall be signed by person or persons legally authorized to bind Bidder to Contract.

The following shall be considered part of the bid and are required to be submitted with each Bid Form:

- Certificate of Compliance with the Iran Divestment Act
- Non-Collusion Affidavit
- Bid Security
- Statement of Bidder’s Qualifications (AIA A305) includ3ing Exhibits A, B, C, D and E.
- Sexual Harassment Policy and Training Certification
- Labor Law 220-i Certification Form
- Certificates of Registration with the NYSDOL as required by NY Labor Law Section 220-i

All blank spaces on all attachments to the Bid Form must be filled in with ink in both words and figures.

Any Bid submitted contrary to requirements above or specified, or containing omissions, conditions, or irregularities of any kind may be rejected by the Owner.

11. CERTIFICATE OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

In accordance with the requirements of General Municipal Law §103-g, the bidder is required to include with its bid either (1) the "Certification of Compliance with the Iran Divestment Act" or, in the case where the bidder is unable to make such certification, (2) the form titled "Declaration of Bidder's Inability to Provide Certification of Compliance with the Iran Divestment Act". This form is included in the Bid Documents.

12. BID SECURITY

Each bid must be accompanied by a Bid Security made payable to Pelham Union Free School District in the amount of five percent (5%) of the Bid Sum (the sum of the Base Bid plus all Add Alternates). The Bid Security shall be either a certified bank check or a Bid Bond issued by a surety company licensed to conduct business in the State of New York on the form included herein (AIA Document A310). The Bid Bond must be issued by a surety which meets the requirements set forth in Article 11 of the General Conditions. The successful bidder’s security will be retained until they have signed the Agreement and furnished required Performance and Payment Bonds. The Owner reserves the right to retain the security of the three lowest bidders for each contract until the successful bidder enters into the contract, or until 45 days after the bid opening, whichever is longer. All other bid security will be returned after formal analysis and evaluation of the bids received. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. CONTRACTOR'S QUALIFICATION STATEMENT

Submit a properly executed Contractor's Qualification Statement on the form included herein (AIA Document A305 with Exhibits A, B, C, D and E) with the Contractor’s bid. The Contractor's Qualification Statement must be signed and notarized. All items must be answered and the data given must be clear and comprehensive. Failure to answer these questions in a complete and satisfactory manner may result in the rejection of the bid. Failure to submit a properly executed Contractor's Qualification Statement with the Bid may result in the rejection of the bid. Additional information may be submitted by bidder, if desired.

If, after evaluating the Contractor's Qualification Statement, the Owner has any doubt that a Bidder has the proper qualifications, it may require from that Bidder within 3 working days and prior to a Contract award, further written evidence of financial data, previous experience, personnel resumes, or other information. If after evaluating supplied data and investigating the evidence, the Owner has any reasonable doubt that a Bidder has the experience, available personnel, reliability, or availability of financial resources to complete the project in a timely manner and in full compliance with the requirements of the Contract, the Owner may reject the Bid and award to the next lowest qualified Bidder

14. SEXUAL HARASSMENT POLICY CERTIFICATION

Submit a fully executed Sexual Harassment Policy Certification form on the form included herein with the Contractor's bid. Failure to answer these questions in a complete and satisfactory manner may result in the rejection of the bid. Failure to submit a properly executed Sexual Harassment Policy Certification form with the Bid may result in the rejection of the bid. .

15. PERFORMANCE AND LABOR AND MATERIAL BOND

The successful bidder shall provide a Performance Bond and Payment Bond made payable to Pelham Union Free School District, each in an amount at least equal to one hundred percent (100%) of the Contract Price as security for the faithful performance of his Contract and for payment of all persons performing labor and furnishing materials in connection with the project. The value of each bond shall be adjusted during the Project construction period to reflect changes in the Contract Sum. All Bonds must meet or exceed the requirements set forth in Article 11 of the General Conditions. Provide such bonds simultaneously with the execution of the Contract. Bonding company and bond must be approved by the Owner. Only surities licensed to do business in the State of New York may be used.

16. SUBMITTAL

Submit each Bid in an opaque, sealed envelope. Identify the envelope with: (1) project name, (2) name of bidder, (3) Contract name (e.g. Contract No. 1 - General Construction Work) and (4) proposal opening date. Submit Bids in accordance with Advertisement for Bids and with these Instructions to Bidders. If forwarded by mail, the Bid must be enclosed in another envelope and forwarded to the Owner by certified mail or tracked delivery at the address indicated in the Advertisement for Bids. The bidder assumes the risk of any delay in the mail or in handling of the bid by the Owner. The bidder assumes full responsibility for having his bid deposited on time and to the location and person indicated in the Advertisement for Bids, regardless of the method of delivery.

17. MODIFICATION AND WITHDRAWAL

No oral, facsimile, or telephonic proposals or modifications of Bids will be considered. Bids may be modified at any time prior to bid opening by submitting to the Owner a written modification, enclosed in a sealed opaque envelope, signed by the bidder, or an officer thereof if the bidder is a corporation, clearly setting forth in what respects the Bid is to be modified. Bids may be withdrawn on written or telegraphic request received from bidders prior to the time fixed for bid opening. Except as otherwise provided by law, negligence on the part of the bidder in preparing his Bid confers no right for the withdrawal of the Bid after it has been opened. No bidder may withdraw his Bid for forty-five (45) days after the opening thereof, except as otherwise provided by law.

18. REJECTION OF BIDS

The Owner reserves the right to reject any and all Bids. The Owner reserves the right to reject any Bid for reasons including, but not limited to, the following:

a. The bidder fails to furnish any portion of the information required pursuant to the Instructions to Bidders.
b. The bidder mis-states or conceals any material fact.
c. The Bid does not strictly conform to law or to requirements of the Contract Documents.
d. The Bid is conditional.
e. The Bid is incomplete (by reason of, for example, failure to fill in an alternate price or failure to submit required documentation described herein).
f. The Bidder is deemed unqualified to undertake the work.

The Owner reserves the right, however, to waive any informalities in the Bids received when such waiver is deemed to be in its interest.

19. OPENING AND AWARD

Bids will be opened as stated in the Advertisement for Bids. The Owner will award the Contracts, if at all, on or about two weeks after receipt of bids.

The Owner reserves the right to accept Alternates in any order or combination and to determine the low bidder on the basis of the sum of the Base Bid and Alternates accepted.

20. EXECUTION OF CONTRACT

After the Owner has ascertained the successful bidder, it shall send a Notice of Award of Contract to bidder to whom a Contract has been awarded.

The Contract used for this project shall be Standard Form of Agreement Between Owner and Contractor, Construction Manager as Advisor Edition - AIA Document A132, 2019 Edition published by the American Institute of Architects as modified herein.

In case of failure or refusal of an accepted Bidder to enter into a Contract within ten (10) days after the issue date of the Notice of Award, or to provide the Performance and Payment Bonds simultaneously with the execution of such Contract, the bidder will be considered as having abandoned the Contract. In such event, the bidder shall be liable for and agrees to pay to the Owner, on demand, damages for such failure or refusal. Such damages shall be the difference between the price bid by him and the price for which such contract shall subsequently be relet, plus the cost of such reletting, plus any other consequential expenses and damages.

The amount of such bidder's Bid Security shall be retained by the Owner and shall be applied toward payment of such damages. If any amount remains in excess of such damages, such remaining amount shall be returned to the bidder.

21. SUBCONTRACTORS

All Subcontractors must be acceptable to the Architect and/or Owner. The Bidder shall submit the names of the Subcontractors proposed for use on the Project and all other information concerning his Subcontractors as requested by the Architect and/or Owner within the time frame stipulated. If the Architect and/or Owner disapproves any proposed

Subcontractor the contractor shall submit the name of an alternate Subcontractor to whom the Architect and/or Owner has no objection in the same manner as the original submittal.

The Owner reserves the right to reject any bid if the names of the proposed Subcontractors are not submitted as required.

22. SALES AND COMPENSATING USE TAXES

The Owner is exempt from paying sales and compensating use taxes of the State of New York and of cities, counties, and other subdivisions of the State on all materials sold to it pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption shall apply to supplies and materials which are incorporated in such project. This exemption does not, however, apply to equipment rentals, small tools, and supplies for equipment such as supplies of gasoline used in operating trucks. The term "materials" as used in this article shall include supplies incorporated in this project. A Tax Exemption Certificate will be furnished to the Contractor by the Owner upon request.

23. LAWS AND REGULATIONS

All applicable State Laws, municipal ordinances, and the rules, regulations and ordinances of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

24. AFFIRMATIVE ACTION PROVISION

During the performance of this Contract, each Contractor agrees that he will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Each Contractor agrees to include, or require the inclusion of the above provision in any subcontract made pursuant to its contract with the Owner.

25. EQUIVALENCY CLAUSE

Whenever a material, article, device, piece of equipment or type of construction is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or similar specific information, it is so identified for the purpose of establishing a standard of quality, and such identification shall not be construed as limiting competition. Any material, article, device, piece of equipment or type of construction of other manufacturers or vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, device, piece of equipment or type of construction so proposed is completely described in submittals to the Architect and is, in the opinion of the Architect, of equal substance, appearance, and function. If the contractor desires to use any kind, type, brand, or manufacturer or material other than those named in the specifications, they shall indicate in writing, when requested, and prior to award of contract, what kind, type, brand, or

manufacturer is included in the base bid for the specified item, following procedures specified in Section 016000. Refer to Division 01 General Requirements (Section 016000) and General Conditions of the Contract for Construction.

26. PAYMENT/ACCOUNTING AND EMPLOYMENT REQUIREMENTS

Contractor shall comply with the latest NYSDOL requirements, including all posting requirements, minimum wage requirements and all other requirements.

Prevailing Wage Rates: The New York State Department of Labor PRC number assigned to this project is PRC# 2026017495. Current Wage Rate Schedules can be found here:

To access the PDF file of your schedule, click on the following link or copy and paste into your browser, type in the PRC number, and click in the Wage Schedule button.

https://apps.labor.ny.gov/wpp/doFindProject.do

NYSDOL Requirements for OSHA 10 Compliance: The Contractor shall certify that every worker employed for this project has completed an OSHA 10 safety training course prior to performing any work on the project. Valid proof of completion of the OSHA 10 training course includes copies of bona fide course completion card and training roster, attendance record, or other documentation from the certified trainer. Simply attesting that all employees have completed the course is not sufficient proof of completion.

27. CONTRACTOR AND SUBCONTRACTOR REGISTRATION WITH THE NYSDOL

In accordance with NYS Labor Law Section 220-i, the Contractor is required to register with the NYS DOL, specifically with the DOL Bureau of Public Work and Prevailing Wage Enforcement, prior to submission of a bid and must include their Certificate of Registration with the bid submission. This proof of registration as required by Labor Law Section 220-i is a minimum qualification. . Failure to provide a valid and verifiable registration number from the NYSDOL Registry at the time of bid submission will result in disqualification of the bid.

Contractors shall also note that subcontractors are required to be registered as required by Labor Law Section 220-i before commencing work on this project.

Submit a fully executed Labor law 220-i Certification Form on the form included herein, and all required attachments, with the Contractor's bid.

28. POST BID PROCEDURES

A. The responsibility of bidders and of their proposed subcontractors will be considered in making the award. The Owner through the Architect may make such investigation as the Owner deems necessary to determine the responsibility of any bidder or to determine the ability of any bidder to perform the Work.

B. Bidders shall furnish all information and data required by the Owner, including financial data, within the time and in the form and manner required by the Owner. Upon notification from the Architect, the three apparent low bidders for each

contract shall furnish within three (3) working days after the bid opening four (4) copies of the following information in writing:

1. The names, addresses and phone numbers of the subcontractors and suppliers that the bidder proposes to use on the project
2. A bar chart schedule showing the bidders' proposed plan and schedule to complete the bidder's work in accordance with the milestones outlined in the Contract Documents. The schedule shall incorporate all critical path items and any time sensitive material order and delivery dates.
5. A proposed schedule of values for the bidder's work;
7. A proposed list of submittals and a proposed schedule for making them, all keyed to the bar chart.
8. A list of proposed substitutions.
9. The name, cell phone number and e-mail address of the firm’s project manager assigned to this project.

C. After receipt of the above information, the Architect will designate a time and place for a meeting between the Owner, the Architect and the apparent low bidder. The apparent low bidder's principal, project manager and site superintendent will attend that meeting, at which time the parties will discuss the bidder's responsiveness, responsibility and qualifications.

D. The Owner reserves the right to disapprove the use of any proposed Subcontractor and in such event the bidder shall submit the name of another Subcontractor in a similar manner within the time specified by the Architect.

E. To the fullest extent allowed by law, the Owner reserves the right to reject any bid if the evidence required by the Owner is not submitted or fails to satisfy the Owner that the bidder is responsible, able and qualified to carry out the obligations of the Contract or to complete the Work as contemplated. The Owner will consider the information received under paragraphs A through D above in determining whether or not to accept a proposal.

F. Acceptance of a proposal will be a notice in writing signed by a duly authorized representative of the Owner.

G. Any bidder whose proposal is accepted will be required to sign the Contract within ten (10) days after receiving notice of acceptance.

H. In the event that the Owner should reject the proposal of a bidder as provided above or otherwise, at the Owner's option, the Owner may elect to meet with the next lowest bidder and to consider the information as provided in paragraphs A through D above. In the event that the proposal of the next lowest bidder is rejected as provided above or otherwise, at the Owner's option, the Owner may elect to meet with the third lowest bidder and repeat the above process. At all times the Owner retains the right to reject all bids.

END OF INSTRUCTIONS TO BIDDERS

INFORMATION AVAILABLE TO BIDDERS

1.1 GENERAL

A. Hazardous Material Information: Data in hazardous material investigation reports included herein are provided to the Contractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between sampling locations. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.

B. Site Information: Data in subsurface investigation reports included herein are provided to the Contractor for information only. Conditions are not intended as representations or warranties of accuracy or continuity between soil borings. The Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.

1. Additional test borings and other exploratory operations may be performed by Contractor, at the Contractor's option and at the Contractor's sole expense; however, no change in the Contract Sum will be authorized for such additional exploration.

LIMITED REPORT OF ENVIRONMENTAL SERVICES

Performed at:

SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERNATIONS
489 SIWANOY PLACE
PELHAM, NY 10803

Prepared for:

Pelham Public Schools
629 Fifth Avenue
Pelham, NY 10803

Prepared by:

WSP USA Inc.
One Penn Plaza, 4th Floor
New York, NY 10119
Tel. (212) 465-5000

Project No. US0048608.1475
Report Date: June 12, 2026

June 12, 2026

Mr. John Condon
Director of Facilities
Pelham Public Schools
629 Fifth Avenue
Pelham, NY 10803

Subject: **Limited Report of Environmental Services**
Pelham Public Schools
Siwanoy Elementary School - Additions and Alternations
489 Siwanoy Place
Pelham, NY 10803

Dear Mr. Condon:

WSP USA, Inc. has completed Additions and Alternations at the Siwanoy Elementary School located at 489 Siwanoy Place, Pelham, NY 10803. The inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM), Lead Based Paints (LBP) and Polychlorinated biphenyls (PCB), based on schematic design drawings developed by KG+D, dated 05/15/2026, and provided by Pelham Public Schools District.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

WSP USA, INC.



Alexander Smolyar
Vice President, Emergency Management & IH Services

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY 1

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS 8

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT 11

4.0 INSPECTION RESULTS 12

5.0 AREAS NOT ACCESSIBILE 64

6.0 CONCLUSIONS AND RECOMMENDATIONS 64

7.0 REPORT CERTIFICATIONS 65

Appendices

Appendix A: Asbestos Sample Analysis Results in Tabular Form

Appendix B: Asbestos Bulk Sample Field Data Sheets with Chain of Custody & Laboratory Results

Appendix C: Asbestos Bulk Sample Location Drawings

Appendix D: Asbestos Containing Material Location Drawings

Appendix E: Lead XRF Shot Results

Appendix F: Polychlorinated Biphenyls Field Data Sheets with Chain of Custody & Laboratory Results

Appendix G: Company License, Personnel Certifications and Laboratory Accreditations

Appendix H: Scope of Work Drawings See Drawings

Appendix I: Photographic Documentation

Appendix J: Previous Sampling Data

1.0 EXECUTIVE SUMMARY

WSP USA, Inc. has performed a material inspection for the presence or absence of Asbestos-Containing Materials (ACM), Lead Based Paints (LBP) and Polychlorinated Biphenyls (PCB) at the Siwanoy Elementary School located at 489 Siwanoy Place, Pelham, NY 10803. The intent of this inspection was to survey for ACM, LBP and PCBs that may be impacted during the Additions and Alternations project at the Siwanoy Elementary School, based on schematic design drawings developed by KG+D, dated 05/15/2026, and provided by Pelham Public Schools District.

On March 25, 2026, Ivan Grujovic of WSP performed limited survey and sample collection at the subject property. On May 5, 6 and 7, 2026, Ivan Grujovic, Martin Douglas and Leonid Abramov performed additional limited survey and sample collection at the subject property. Mr. Grujovic is licensed as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert# 25-6SFJ1-SHAB). Mr. Abramov is licensed as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert# 25-61FJC-SHAB) and a licensed US EPA Lead Inspector (Cert# LBP-I-19870-3). Mr. Douglas is licensed as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert# 25-6ZZRL-SHAB) and a licensed US EPA Lead Inspector (Cert# LBP-I-I270412-1).

The results of the visual inspection and bulk sample analysis determined that the following suspect ACM, LBP and PCBs materials may be impacted by the proposed Additions and Alternations project at the Siwanoy Elementary School:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected on 03/25/26, 05/05/26, 05/06/26 & 05/07/26 by WSP indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Ceiling Plaster, Brown Coat**
- **Wall Plaster, Brown Coat**
- **Ceiling Cement Coating, Gray**
- **Exterior Window/Louver Frame Caulking, Gray/White**
- **Debris between Joists, Gray**
- **Concealed Corrugated Radiator Insulation, White/Gray**
- **Ceramic Wal Tile Backing, Gray – Vermiculite Detected**

The following materials contain Asbestos as per 2025 AHERA report:

- **Floor Tile Mastic associated with 9”x 9” Green Floor Tile, Black**
- **9”x 9” Floor Tile, Green**
- **Floor Tile Mastic associated with 9”x 9” Yellow Floor Tile, Black**
- **9”x 9” Floor Tile, Yellow**

Asbestos was **assumed** to exist in the following materials due to either inaccessibility or inability to use destructive measures**:**

- **Concealed Underground Pipe**
- **Concealed Waterproofing Barrier behind Face Brick**
- **Concealed Foundation Damp Proofing**
- **Concealed Door/Window/Louver Lintel Flashing/Fabric/Rust Inhibitor**
- **Concealed Door/Window/Louver Frame Caulking/Tar**
- **Concealed Vapor Diffusion Retarder under Slab / Soft Concrete Filler**
- **Concealed Pipe Insulation & Associated Fittings in Wall Chase**
- **Concealed Felt Paper under Wood Floor**
- **Concealed Waterproofing under Bathroom Floor**
- **Roofing System Materials**
- **Flashing/Tar associated with Roofing System**
- **Roof Asphalt Shingles**
- **Concealed Felt Paper under Roof Asphalt Shingle**
- **Roof Flashing/Tar**
- **Roof Drip Edge Flashing/Tar**

Analytical results of the bulk samples collected on 03/25/26, 05/05/26, 05/06/26 & 05/07/26 by WSP indicate that the following materials **did not contain asbestos** (less than 1-percent):

- Ceiling Plaster, White Coat
- Waterproofing behind Ceiling Plaster, Black
- Wall Plaster, White Coat
- 2'x 2' Ceiling Tile Fissured, Gray
- Brick Mortar, Gray
- Terracotta Block Mortar, Gray
- Concrete Masonry Unit Mortar, Gray
- 2"x 4" Ceiling Tile Fissured, Gray
- Ceiling Gypsum Board, White
- Ceiling Joint Compound, White
- Wall Gypsum Board, White
- Wall Joint Compound, White
- Carpet Tile Glue, Gray
- Sink Undercoating, Gray
- Sink Undercoating, Beige
- Radiator Insulation, Brown
- Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray
- 12"x 12" Floor Tile, White Marbled
- 12"x 12" Floor Tile, Blue
- Baseboard Glue associated with 4" Black Baseboard, White
- 4" Baseboard, Black
- Corkboard, Brown
- Duct Sealant, Red
- Ceramic Wall Tile Grout, White
- Ceramic Floor Tile Grout, Gray

- Ceramic Floor Tile Backing, Gray
- Paper associated with Fiberglass Ceiling Insulation, Black
- Bathroom Radiator Insulation, Brown
- Glue Dots associated with 1'x 1' Pinhole Ceiling Tile, Brown
- 1'x 1' Pinhole Glued Ceiling Tile, White
- Glue associated with Gym Wall Pads, Beige
- Interior Window Caulking, Beige
- Urinal Caulking, White
- Glue Dots associated with 1'x 1' Pinhole Acoustical Tile, Brown
- 1'x 1' Pinhole Acoustical Tile, White
- Asphalt, Black
- Stone Mortar, Gray
- Face Brick Mortar, Gray
- Old Wood Louver Paint, Gray
- Flange Gasket associated with Boiler Feeder, Brown
- Flange Gasket associated with Pump, Brown
- Interior Chimney Mortar, Gray
- Breeching Sealant, Brown
- Firestop, Gray
- Flange Gasket, Red
- Flange Gasket, Beige
- Fire Brick inside Breeching, White
- Rope Gasket associated with Boiler, White
- Floor Tile Mastic associated with 12"x 12" Blue Floor Tile, Black
- 12"x 12" Floor Tile, Blue
- Leveling Compound, Gray
- Floor Tile Mastic associated with 12"x 12" Peach Floor Tile, Black
- 12"x 12" Floor Tile, Peach

B. LEAD-BASED PAINT

Based upon XRF readings, lead has been confirmed to exist in the following tested combinations:

- **White Paint on Plaster Wall (Area A- 2nd Floor- 211A Closet)**
- **Yellow Paint on Wood Door Frame (Area A- 2nd Floor- 211A Closet)**
- **Beige Paint on Wood Window Frame (Area A- 2nd Floor- 211A Closet)**
- **Beige Paint on Wood Window Sill (Area A- 2nd Floor- 211A Closet)**
- **Blue Paint on Plaster Wall (Area B- 2nd Floor- Rm 203)**
- **White Paint on Plaster Wall (Area B- 2nd Floor- Rm 203)**
- **White Paint on Plaster Wall (Area B- 2nd Floor- Hallway)**
- **White Paint on Plaster Wall (Area A- 2nd Floor- Rm 211)**
- **White Paint on Plaster Wall (Area B- 1st Floor- Hallway)**
- **Beige Paint on Wood Door (Area B- 1st Floor- Rm 104)**

- **Black Paint on Plaster Cove Base (Area A- 1st Floor- Hallway)**
- **White Paint on Plaster Wall (Area A- 1st Floor- Rm 108)**
- **White Paint on Plaster Wall (Area A- 1st Floor- Rm 108a Toilet)**
- **Beige Paint on Wood Shelf (Area A- 1st Floor- Rm 108a Toilet)**
- **White Paint on Wood Window Frame (Area A- 1st Floor- Rm 108a Toilet)**
- **Beige Paint on Wood Door (Area B- Ground Floor- Rm 002)**
- **White Paint on Plaster Wall (Area B- Ground Floor- Rm 002)**
- **Beige Paint on Wood Cove Base (Area B- Ground Floor- Rm 002)**
- **Beige Paint on Wood Window Frame (Area B- Ground Floor- Rm 002)**
- **Beige Paint on Wood Window Sill (Area B- Ground Floor- Rm 002)**
- **White Paint on Plaster Wall (Area B- Ground Floor- Rm 002)**
- **Beige Paint on Wood Door (Area B- Ground Floor- Rm 002)**
- **White Paint on Plaster Wall (Area C- Ground Floor- Hallway)**
- **Beige Paint on Wood Door (Area C- Ground Floor- Rm 106 Art)**

Based upon XRF readings, lead has been **not detected** to exist in the following tested combinations:

- Beige Paint on Wood Door Frame (Area B- 2nd Floor – Rm 208B)
- Beige Paint on Wood Door (Area B- 2nd Floor – Rm 208B)
- White Paint on Sheet Rock Wall (Area B- 2nd Floor – Rm 208B)
- White Paint on Metal Electrical Conduit (Area B- 2nd Floor – Rm 208B)
- Beige Paint on Wood Cove Base (Area B- 2nd Floor – Rm 208B)
- White Paint on Wood Cabinet (Area B- 2nd Floor – Rm 208B)
- Blue Paint on Sheet Rock Wall (Area B- 2nd Floor – Rm 208B)
- Varnish on Wood Floor (Area B- 2nd Floor – Rm 208B)
- White Paint on Metal Ceiling Grid (Area B- 2nd Floor – Rm 208B)
- Beige Paint on Wood Door Frame (Area A- 2nd Floor Girls Bathroom 209)
- Beige Paint on Wood Door (Area A- 2nd Floor Girls Bathroom 209)
- White Paint on Plaster Upper Wall (Area A- 2nd Floor Girls Bathroom 209)
- Pink Ceramic Tile Lower Wall (Area A- 2nd Floor Girls Bathroom 209)
- Beige Paint on Wood Window Sill (Area A- 2nd Floor Girls Bathroom 209)
- Beige Paint on Metal Window Frame (Area A- 2nd Floor Girls Bathroom 209)
- Yellow Paint on Wood Door Frame (Area A- 2nd Floor- 211A Closet)
- Yellow Paint on Wood Cove Base (Area A- 2nd Floor- 211A Closet)
- White Paint on Metal Duct Work (Area A- 2nd Floor- 211A Closet)
- Varnish Wood Floor (Area A- 2nd Floor- 211A Closet)
- Gray Paint on Metal Ceiling Grid (Area A- 2nd Floor- 211A Closet)
- Beige Paint on Wood Door Frame (Area B- 2nd Floor- Rm 203)
- Beige Paint on Wood Door (Area B- 2nd Floor- Rm 203)
- Beige Paint on Wood Cove Base (Area B- 2nd Floor- Rm 203)
- White Paint on Metal Window Frame (Area B- 2nd Floor- Rm 203)
- Beige Paint on Wood Window Sill (Area B- 2nd Floor- Rm 203)
- Beige Paint on Metal Radiator Cover (Area B- 2nd Floor- Rm 203)

- Varnish on Wood Floor (Area B- 2nd Floor- Rm 203)
- Galvanised Metal Ceiling Grid (Area B- 2nd Floor- Rm 203)
- Beige Paint on Metal Door Frame (Area B- 2nd Floor- Hallway)
- Beige Paint on Metal Door (Area B- 2nd Floor- Hallway)
- Black Paint on Plaster Cove Base (Area B- 2nd Floor- Hallway)
- Beige Paint on Wood Door Frame (Area A- 2nd Floor- Rm 211)
- Beige Paint on Wood Door (Area A- 2nd Floor- Rm 211)
- Beige Paint on Wood Cabinet (Area A- 2nd Floor- Rm 211)
- Beige Paint on Wood Window Frame (Area A- 2nd Floor- Rm 211)
- Beige Paint on Wood Window Sill (Area A- 2nd Floor- Rm 211)
- Beige Paint on Metal Radiator Cover (Area A- 2nd Floor- Rm 211)
- Varnish on Wood Floor (Area A- 2nd Floor- Rm 211)
- Galvanised Metal Ceiling Grid (Area A- 2nd Floor- Rm 211)
- Beige Paint on Metal Door Frame (Area B- 1st Floor- Hallway)
- Beige Paint on Metal Door (Area B- 1st Floor- Hallway)
- White Paint on Plaster Wall (Area B- 1st Floor- Hallway)
- Black Paint on Plaster Cove Base (Area B- 1st Floor- Hallway)
- White Paint on Plaster Wall (Area B- 1st Floor- Hallway)
- Beige Paint on Wood Door Frame (Area B- 1st Floor- Rm 104)
- Beige Paint on Wood Cove Base (Area B- 1st Floor- Rm 104)
- White Paint on Plaster Wall (Area B- 1st Floor- Rm 104)
- White Paint on Plaster Wall (Area B- 1st Floor- Rm 104)
- Beige Paint on Wood Window Frame (Area B- 1st Floor- Rm 104)
- Beige Paint on Wood Window Sill (Area B- 1st Floor- Rm 104)
- White Paint on Plaster Wall (Area B- 1st Floor- Rm 104)
- Beige Paint on Metal Radiator Cover (Area B- 1st Floor- Rm 104)
- White Paint on Plaster Wall (Area B- 1st Floor- Rm 104)
- Beige Paint on Metal Door Frame (Area A- 1st Floor- Hallway)
- Beige Paint on Metal Door (Area A- 1st Floor- Hallway)
- White Paint on Plaster Wall (Area A- 1st Floor- Hallway)
- Beige Paint on Metal Radiator Cover (Area A- 1st Floor- Hallway)
- Beige Paint on Wood Door Frame (Area A- 1st Floor- Rm 108)
- Beige Paint on Wood Door (Area A- 1st Floor- Rm 108)
- Beige Paint on Wood Cabinet (Area A- 1st Floor- Rm 108)
- White Paint on Wood Acoustical Tile (Area A- 1st Floor- Rm 108)
- Beige Paint on Wood Door Frame (Area A- 1st Floor- Rm 108a Toilet)
- Beige Paint on Wood Door (Area A- 1st Floor- Rm 108a Toilet)
- Beige Paint on Wood Window Frame (Area A- 1st Floor- Rm 108a Toilet)
- Beige Paint on Wood Window Sill (Area A- 1st Floor- Rm 108a Toilet)
- White Paint on Metal Radiator Cover (Area A- 1st Floor- Rm 108a Toilet)
- White Paint on Metal Duct Work (Area A- 1st Floor- Rm 108a Toilet)
- Beige Paint on Wood Toilet Stalls (Area A- 1st Floor- Rm 108a Toilet)
- Beige Paint on Wood Door Frame (Area B- Ground Floor- Rm 002)
- Black Paint on Metal Ladder (Area B- Ground Floor- Rm 002)

- Yellow Paint on Metal Ladder (Area B- Ground Floor- Rm 002)
- Beige Paint on Metal Radiator Cover (Area B- Ground Floor- Rm 002)
- White Paint on Metal Cabinet (Area B- Ground Floor- Rm 002)
- White Paint on Metal Duct Work (Area B- Ground Floor- Rm 002)
- Beige Paint on Metal Door Frame (Area C- Ground Floor- Hallway)
- Beige Paint on Metal Door (Area C- Ground Floor- Hallway)
- White Paint on Plaster Wall (Area C- Ground Floor- Hallway)
- Black Paint on Plaster Cove Base (Area C- Ground Floor- Hallway)
- White Paint on Wood Lower Wall (Area C- Ground Floor- Hallway)
- Beige Paint on Wood Door Frame (Area C- Ground Floor- Rm 106 Art)
- White Paint on Wood Cabinet (Area C- Ground Floor- Rm 106 Art)
- White Paint on Plaster Wall (Area C- Ground Floor- Rm 106 Art)
- Beige Paint on Wood Window Frame (Area C- Ground Floor- Rm 106 Art)
- Beige Paint on Wood Window Sill (Area C- Ground Floor- Rm 106 Art)
- Black Paint on Metal Stair Rail (Area C- Ground Floor- Rm 106 Art)
- White Paint on Plaster Wall (Area C- Ground Floor- Rm 106 Art)
- White Paint on Metal Window Frame (Area B-Exterior- Rm 208)
- White Paint on Wood Window Sill (Area B-Exterior- Rm 208)
- White Paint on Metal Window Frame (Area A- Exterior- Rm 210)
- White Paint on Wood Window Sill (Area A- Exterior- Rm 210)
- Black Paint on Metal Stair Rail (Exterior- O/S Carpentry Room)
- Black Paint on Metal Stair Rail (Exterior- O/S Kitchen Storage)
- Black Paint on Metal Fence (Exterior- Playground)
- Red Paint on Metal Door (Exterior- Entrance to Carpentry Room)
- Red Paint on Metal Door Frame (Exterior- Entrance to Carpentry Room)
- Black Paint on Metal Door (Exterior- Entrance to Corridor 001)
- Red Paint on Metal Door Frame (Exterior- Entrance to Corridor 001)
- White Paint on Metal Window Frame (Area A- Exterior- Rm 006)
- White Paint on Metal Window Sill (Area A- Exterior- Rm 006)

C. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples reported on 05/05/26, 05/06/26 & 05/07/26 indicate that the following materials **contain PCB** (greater than 50 PPM):

- **None**

Analytical results of the bulk samples reported on 05/05/26, 05/06/26 & 05/07/26 indicate that the following materials **did not contain PCB** (less than 50 PPM):

- Exterior Window/Louver Caulking, Gray/White
- Firestop, Gray
- Breeching Sealant, Brown
- Duct Sealant, Red

- Interior Window Caulking, White
- Urinal Caulking, White

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

A. ASBESTOS-CONTAINING MATERIAL

Guidelines used for the inspection were established by the Environmental Protection Agency (EPA) in the Guidance for Controlling Asbestos Containing Materials in Buildings, Office of Pesticides and Toxic Substances, Doc 560/5-85-024, and 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th, 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory of record performing the analyses for the initial survey is Laboratory Testing Services, Inc. located at 40-20 22nd Street, Long Island City, NY 11101. The laboratory has accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101958-0)
- New York State Environmental Laboratory Approval Program (Lab No. 10955)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. LAP 100287)

The laboratory of record performing the analyses for the follow-up survey is Atlas Environmental Lab, Corp. located at 255 West 36th Street, New York, NY 10018. The laboratory has accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 500092-0)
- New York State Environmental Laboratory Approval Program (Lab No. 11999)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 208306)

B. LEAD-BASED PAINT

Painted surfaces within the space equivalents in the scope of work were identified and grouped together by component type, substrate and visible color. In similar fashion, the inspection continued in each space equivalent with the identification of unique combinations of component, substrate and visible color. A random representative area of each unique combination was sampled and tested. For each of these designated components, an area on the component was chosen which represents the paint on that building component. During the inspection, components that are accessible surfaces, friction surfaces, impact surfaces, or have deteriorated paint was identified.

The readings of paint surfaces were taken using a Viken Pb200e HUD Lead Paint Handheld XRF Analyzer. The method of measurement is based on the spectrometric analysis of lead K-shell X-ray fluorescence within a controlled depth of interrogation. The analyzer uses a Co-57

radioactive source and an advanced, solid-state, room temperature, radiation detector to generate and detect the x-ray fluorescence spectrum of a painted surface. The spectrum is then analyzed by a microprocessor to eliminate the effects of substrate and other factors such as scattering to allow an accurate determination of the amount of lead on the surface. The Viken Pb200e automatically analyzes spectrometric data in real time and differentiates the lead signal from the spectrum. The x-ray fluorescence properties are determined through calibration process and are used for automatic substrate correction and calculation of the lead content of a painted surface.

C. POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761) and the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605). These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed Additions and Alternations project at the Siwanoy Elementary School. Additionally, the inspectors classified materials by friability and condition. This helps to determine the extent of damage of ACM or Assumed ACM in certain areas as well as the potential for further damage and asbestos fibers release due to disturbance of the material. The scope of work was based on schematic design drawings developed by KG+D, dated 05/15/2026, and provided by Pelham Public Schools District.

A. ASBESTOS-CONTAINING MATERIAL

A total of two hundred ninety-four (294) samples of suspect materials were collected and submitted to Atlas Environmental Lab, Corp. and Laboratory Testing Services, Inc. for analysis via Polarized Light Microscopy (PLM). Additionally, a total of eighty-one (81) samples were further analyzed via Transmission Electron Microscopy (TEM). Laboratory analysis results, in tabular form, are included in Appendix A.

B. LEAD-BASED PAINT

The lead inspection involved a thorough visual examination of all accessible areas that may be impacted by the proposed Additions and Alternations project at the Siwanoy Elementary School. XRF testing was performed in the subject space in order to determine the lead content of various painted surfaces. Following the procedure, WSP took a total of hundred sixty-two (162) readings. There were also twelve (12) calibration checks.

C. PCB-CONTAINING MATERIAL

The PCB Inspection involved a thorough visual examination of all areas that may be impacted by the proposed Additions and Alternations project at the Siwanoy Elementary School. A total of six (6) composite sample of suspect materials was collected and submitted to the ALS Global USA Environmental lab for analysis.

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The following suspect materials were observed during this inspection and/or sampled and analyzed for asbestos content by WSP:

LOCATION	MATERIAL	Friable Y/N	Condition	Approx. ACM Quantity	ASBESTOS CONTENT	Note
Exterior Playground	Asphalt, Black	Y	G	N/A	Non-ACM	
	Concealed Underground Pipe	**N**	**---**	**435 LF**	**Assumed ACM**	**Inaccessible/Concealed Affected by Stormwater Pipe Cut/Removal**
	Pavement	---	---	---	Non-Suspect	
	Gravel	---	---	---	Non-Suspect	
	Stone Retaining Wall	---	---	---	Non-Suspect	
	Stone Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Fence	---	---	---	Non-Suspect	
	Metal Bench	---	---	---	Non-Suspect	
	Concrete Bench/Fence Support	---	---	---	Non-Suspect	
	Metal Grate	---	---	---	Non-Suspect	
	Concrete Catch Basin	---	---	---	Non-Suspect	
	Metal	---	---	---	Non-Suspect	
	Plastic/Metal Playground	---	---	---	Non-Suspect	

LOCATION	MATERIAL	Friable Y/N	Condition	Approx. ACM Quantity	ASBESTOS CONTENT	Note
Exterior Throughout	Stone Wall	---	---	---	Non-Suspect	
	Stone Mortar, Gray	Y	G	N/A	Non-ACM	
	Brick	---	---	---	Non-Suspect	
	Face Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Stairs	---	---	---	Non-Suspect	
	Concrete Pad/Landing	---	---	---	Non-Suspect	
	Concrete Areaway/Stairs	---	---	---	Non-Suspect	
	Metal Gutter	---	---	---	Non-Suspect	
	Metal Fence	---	---	---	Non-Suspect	
	Old Wood Louver Paint, Gray	N	D	N/A	Non-Suspect	
	Exterior Door/Window/Louver Caulking, Gray/White	**N**	**G**	**1,038 SF (6,210 LF)**	**4.8% Chrysotile**	**Affected by Windows Replacement; Door Demolition**
	Concealed Door/Window/Louver Frame Caulking/Tar	**N**	**---**	**1,038 SF (6,210 LF)**	**Assumed ACM**	
	Concealed Door/Window/Louver Lintel Flashing/Fabric/Rust Inhibitor	**N**	**---**	**1,705 SF**	**Assumed ACM**	
	Concealed Waterproofing Barrier behind Face Brick	**N**	**---**	**3,715 SF**	**Assumed ACM**	**Affected by Windows Replacement; Door Demolition; Wall Opening and Demolition**
	Concealed Foundation Damp Proofing	**N**	**---**	**230 SF**	**Assumed ACM**	
Interior Throughout	Wall Gypsum Board, White	Y	G	N/A	Non-ACM	
	Wall Joint Compound, White	Y	G	N/A	Non-ACM	

LOCATION	MATERIAL	Friable Y/N	Condition	Approx. ACM Quantity	ASBESTOS CONTENT	Note
Interior Throughout	Ceiling Gypsum Board, White	Y	G	N/A	Non-ACM	
	Ceiling Joint Compound, White	Y	G	N/A	Non-ACM	
	Corkboard, Brown	N	G	N/A	Non-ACM	
Area A Ground Floor Crawlspace	Pipe Insulation & associated Fittings	Y	---	---	Assumed ACM	Not Affected by Current SOW
	Waterproofing on Concrete Wall	N	---	---	Assumed ACM	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Soil on Ground	---	---	---	Non-Suspect	
	Debris associated with Soil	Y	SD	N/A	Assumed ACM	Not Affected by SOW
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
Area B **Ground Floor Corridor, Vestibule & Stairwells**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**35 SF**	**1.3% Chrysotile**	**Affected by New Branch Piping Connecting to Mains; Interior Wall Demolition; Building Entrance Door Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**520 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	

LOCATION	MATERIAL	Friable Y/N	Condition	Approx. ACM Quantity	ASBESTOS CONTENT	Note
Area B **Ground Floor Corridor, Vestibule & Stairwells**	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Lockers	---	---	---	Non-Suspect	
	Baseboard Glue associated with 4” Black Baseboard, White	N	G	N/A	Non-ACM	
	4” Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12”x 12” White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12”x 12” Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12”x 12” Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Ground Floor Teachers’ Lounge 015**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	

Area B **Ground Floor** **Teachers' Lounge 015**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**20 SF**	**1.3% Chrysotile**	**Affected by: Exterior Wall Opening; New Vestibule Construction; Windows/Louvers Replacement; Door Demolition**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**185 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Wood Kitchen Cabinets	---	---	---	Non-Suspect	
	Sink without Undercoating	---	---	---	Non-Suspect	
	Leveling Compound, Gray	Y	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Ground Floor** **All Gender Bathroom 013**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**8 SF**	**1.3% Chrysotile**	**Affected by Radiator Removal; Window Replacement; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**24 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	

Area B **Ground Floor** **All Gender Bathroom 013**	**Ceramic Tile**	**---**	**---**	**16 SF**	**Contaminated ACM**	**Affected by Radiator Removal; Window Replacement**
	Ceramic Wall Tile Backing, Gray	**Y**	**G**			
	Ceramic Wall Tile Grout, White	**Y**	**G**			
	Ceramic Floor Tile Backing, Gray	Y	G	N/A	Non-ACM	
	Ceramic Floor Tile Grout, Gray	Y	G	N/A	Non-ACM	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	Y	---	25 LF	Assumed ACM	Not Affected by SOW
	Clear Silicone associated with Fixture	---	---	---	Non-Suspect	
	Concealed Waterproofing under Bathroom Floor	**N**	**---**	**40 SF**	**Assumed ACM**	**Affected by New Footings Installation**
Area B Ground Floor Psychology Office 011 & Adjacent Office 011A	**Ceiling Cement Coating, Gray**	**Y**	**G**	**12 SF**	**1.3% Chrysotile**	**Affected by DOAS Installation**
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Terracotta Block	---	---	---	Non-Suspect	
	Terracotta Block Mortar, Gray	Y	G	N/A	Non-ACM	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	

Area B Ground Floor Psychology Office 011 & Adjacent Office 011A	12”x 12” Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12”x 12” Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Ground Floor** **Storage 010 & Adjacent Closet 010A**	**Ceiling Cement Coating, Gray**	**Y**	**G**	**30 SF**	**1.3% Chrysotile**	**Affected by Air Riser Mechanical Shaft Construction; Ceiling Mounted Fan Coil Unit Installation; New Branch Piping Connecting to Mains; DOAS Installation**
	Terracotta Block	---	---	---	Non-Suspect	
	Terracotta Block Mortar, Gray	Y	G	N/A	Non-ACM	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Newer Electrical Panel	---	---	---	Non-Suspect	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Concrete Floor	---	---	---	Non-Suspect	
Area B **Ground Floor** **Music Room 009 & Adjacent Storage 009A**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	

Area B **Ground Floor** **Music Room 009 & Adjacent Storage 009A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**80 SF**	**1.3% Chrysotile**	**Affected by: Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Air Riser Mechanical Shaft Construction; Wall Opening; Interior Wall Demolition; Windows Replacement; Electrical Panel Relocation; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**300 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	N/A	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Newer Electrical Panel	---	---	---	Non-Suspect	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Leveling Compound, Gray	Y	G	N/A	Non-ACM	
	Floor Tile Mastic associated with 12"x 12" Peach Floor Tile, Black	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Peach	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	

Area B **Ground Floor** **Occupational Therapy 008**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**20 SF**	**1.3% Chrysotile**	**Affected by Interior Wall Demolition; Door Demolition; Space Reconfiguration**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**490 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Nailed-In Carpet	---	---	---	Non-Suspect	
	Floor Tile Mastic associated with 12"x 12" Blue Floor Tile, Black	**N**	**G**	**110 SF**	**Contaminated ACM**	**Affected by Interior Wall Demolition; Door Demolition; Space Reconfiguration; New Footings Instalation**
	12"x 12" Floor Tile, Blue	**N**	**G**			
	Floor Tile Mastic associated with 9"x 9" Green Floor Tile, Black	**N**	**G**		**ACM per 2025 AHERA**	
	9"x 9" Floor Tile, Green	**N**	**G**			
	Concrete Slab	---	---	---	Non-ACM	
Area B **Ground Floor** **All Gender Bathroom 007A**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**96 SF**	**1.3% Chrysotile**	**Affected by Radiator Removal; Window Replacement; Interior Wall Demolition; Door Demolition; Space Reconfiguration**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**550 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Ceramic Tile	**---**	**---**	**300 SF**	**Contaminated ACM**	
	Ceramic Wall Tile Backing, Gray	**Y**	**G**			
	Ceramic Wall Tile Grout, White	**Y**	**G**			

Area B **Ground Floor** **All Gender Bathroom 007A**	Ceramic Floor Tile Backing, Gray	Y	G	N/A	Non-ACM	
	Ceramic Floor Tile Grout, Gray	Y	G	N/A	Non-ACM	
	Metal Pipe	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**25 LF**	**Assumed ACM**	**Affected by Interior Wall Demolition; Door Demolition; Space Reconfiguration**
	Concealed Waterproofing under Bathroom Floor	**N**	**---**	**96 SF**	**Assumed ACM**	
Area B **Ground Floor** **Resource Room 007**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**60 SF**	**1.3% Chrysotile**	**Affected by Radiator Removal; Window Replacement; Interior Wall Demolition; Door Demolition; Space Reconfiguration; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**360 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Glue Dots associated with 1'x 1' White Pinhole Ceiling Tile, Brown	**N**	**G**	**40 SF**	**Contaminated ACM**	
	1'x 1' Pinhole Ceiling Tile, White	N	G	N/A	Non-ACM	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Laminate Floor & associated Adhesive (Top Layer)	**N**	**G**	**282 SF**	**Contaminated ACM**	**Affected by Interior Wall Demolition; Door Demolition; Space Reconfiguration**
	Floor Tile Mastic associated with 12"x 12" Blue Floor Tile, Black (Middle Layer)	**N**	**G**			

Area B **Ground Floor Resource Room 007**	**12”x 12” Floor Tile, Blue (Middle Layer)**	**N**	**G**	**282 SF**	**Contaminated ACM**	**Affected by Interior Wall Demolition; Door Demolition; Space Reconfiguration**
	Floor Tile Mastic associated with 9”x 9” Green Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
	9”x 9” Floor Tile, Green (Bottom Layer)	**N**	**G**			
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Ground Floor Classroom 014 (Kindergarten) & Adjacent Closet**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**42 SF**	**1.3% Chrysotile**	**Affected by: Windows Replacement; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Radiator Replacement/Demolition; Pipe Riser Installation in Closet; Air Riser Mechanical Shaft Construction; New 6” Dual Temperature Piping; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**165 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2’x 2’ Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Metal Support Column	---	---	---	Non-Suspect	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Baseboard Glue associated with 4” Black Baseboard, White	N	G	N/A	Non-ACM	
	4” Baseboard, Black	N	G	N/A	Non-ACM	
	Leveling Compound, Gray	Y	G	N/A	Non-ACM	

Area B **Ground Floor Classroom 014 (Kindergarten) & Adjacent Closet**	Floor Tile Mastic associated with 12”x 12” Peach Floor Tile, Black	N	G	N/A	Non-ACM	
	12”x 12” Floor Tile, Peach	N	G	N/A	Non-ACM	
	Concrete Floor in Closet	---	---	---	Non-Suspect	
	Floor Tile Mastic associated with 9”x 9” Green Floor Tile, Black	**N**	**G**	**80 SF**	**ACM per 2025 AHERA**	**Confirmed under Casework and Assumed under Sink Cabinet** **Affected by Radiator Replacement/Demolition; Sink/Cabinet Demolition**
	9”x 9” Floor Tile, Green	**N**	**G**			
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Ground Floor Custodial Office 012**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**16 SF**	**1.3% Chrysotile**	**Affected by Exhaust Fan Demolition (with Ductwork, Registers, Hangers, Controls, etc.); Windows Replacement; New 6” Dual Temperature Piping; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**48 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Metal Pipe	---	---	---	Non-Suspect	
	Flange Gasket, Red	N	G	N/A	Non-ACM	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Baseboard Glue associated with 4” Black Baseboard, White	N	G	N/A	Non-ACM	
	4” Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12”x 12” White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	

Area B **Ground Floor Custodial Office 012**	12”x 12” Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12”x 12” Floor Tile, Blue	N	G	N/A	Non-ACM	
Area B **Ground Floor Nurse’s Office 001**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	2’x 2’ Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Ceiling Plaster, Brown Coat	**Y**	**G**	**15 SF**	**1.3% Chrysotile**	**Affected by Wall Opening; Closet/Shelves Demolition; Sink Demolition; Radiator Replacement/Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**100 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Floor Tile Mastic associated with 12”x 12” Blue Floor Tile, Black (Top Layer)	**N**	**G**	**233 SF**	**Contaminated ACM**	
	12”x 12” Floor Tile, Blue (Top Layer)	**N**	**G**			
	Floor Tile Mastic associated with 9”x 9” Green Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
	9”x 9” Floor Tile, Green (Bottom Layer)	**N**	**G**			
	Concrete Slab	---	---	---	Non-Suspect	
Area B **Classroom 002 (Kindergarten) with Adjacent Bathroom, Vestibule & Closet 002A**	Waterproofing behind Ceiling Plaster	N	G	N/A	Non-ACM	
	2’x 2’ Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	

Area B **Classroom 002 (Kindergarten) with Adjacent Bathroom, Vestibule & Closet 002A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**150 SF**	**1.3% Chrysotile**	**Affected by: Windows Replacement; Radiator Replacement/Demolition; Sink and Lavatory Demolition (Connections and Capping Only); Pipe Riser Installation in Closet; Air Riser Mechanical Shaft Construction; Space Reconfiguration; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**1,470 SF**	**2.6% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Ceramic Tile	**---**	**---**	**120 SF**	**Contaminated ACM**	
	Ceramic Wall Tile Backing, Gray	**Y**	**G**			
	Ceramic Wall Tile Grout, White	**Y**	**G**			
	Concealed Pipe Insulation & associated Fittings	**Y**	**---**	**6 LF**	**Assumed ACM**	
	Concealed Waterproofing under Bathroom Floor	**N**	**G**	**70 SF**	**Assumed ACM**	
	Ceramic Floor Tile Backing, Gray	Y	G	N/A	Non-ACM	
	Ceramic Floor Tile Grout, Gray	Y	G	N/A	Non-ACM	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	

Area B **Classroom 002 (Kindergarten) with Adjacent Bathroom, Vestibule & Closet 002A**	**Concealed Felt Paper under Wood Floor**	**N**	**---**	**70 SF**	**Assumed ACM**	**Affected by: Windows Replacement; Radiator Replacement/Demolition; Sink Demolition; Pipe Riser Installation in Closet; Air Riser Mechanical Shaft Construction; Space Reconfiguration**
	Floor Tile Mastic/Glue associated with 12"x 12" Beige Marbled Floor Tile (Top Layer)	**N**	**G**	**190 SF**	**Contaminated ACM**	
	12"x 12" Floor Tile, Beige Marbled (Top Layer)	**N**	**G**			
	Floor Tile Mastic associated with 9"x 9" Green Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
	9"x 9" Floor Tile, Green (Bottom Layer)	**N**	**G**			
	Concrete Slab	---	---	---	Non-Suspect	
Area C Ground Floor Corridor, Vestibule & Paint Storage	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	

Area C Ground Floor Corridor, Vestibule & Paint Storage	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area C **Ground Floor** **Boiler Room 005A & Adjacent Vestibule**	Concrete Ceiling & Beams	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Firestop, Gray	N	G	N/A	Non-ACM	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Breeching	---	---	---	Non-Suspect	
	Breeching Sealant, Brown	N	SD	N/A	Non-ACM	
	Fire Brick Inside Breeching, White	Y	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Newer Electrical Panel	---	---	---	Non-Suspect	
	Boiler with Fiberglass Insulation	---	---	---	Non-Suspect	
	Flange Gasket, Red	N	G	N/A	Non-ACM	

Area C **Ground Floor** **Boiler Room 005A & Adjacent Vestibule**	Flange Gasket, Beige	N	G	N/A	Non-ACM	
	Rope Gasket associated with Boilers #1 & #2	N	G	N/A	Non-ACM	
	Concrete Floor	---	---	---	Non-Suspect	
	Concealed Vapor Diffusion Retarder under Slab / Soft Concrete Filler	**---**	**---**	**100 SF**	**Assumed ACM**	**Affected by Exterior Wall Opening; Sloped Floor Partial Removal; Steal Boilers Demolition (with associated Burner Breeching, Piping, Valves, Controls, etc.)**
Area C **Ground Floor** **Carpentry Shop 005**	Concrete Ceiling, Beams & Columns	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Firestop, Gray	N	G	N/A	Non-ACM	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Boiler Feed Pump	---	---	---	Non-Suspect	
	Flange Gasket associated with Boiler Feed Pump, Brown	N	G	N/A	Non-ACM	
	Fuel Oil Pump	---	---	---	Non-Suspect	
	Flange Gasket associated with Fuel Oil Pump, Brown	N	G	N/A	Non-ACM	

Area C **Ground Floor** **Carpentry Shop 005**	Concrete Floor	---	---	---	Non-Suspect	
	Concealed Vapor Diffusion Retarder under Slab / Soft Concrete Filler	**---**	**---**	**32 SF**	**Assumed ACM**	**Affected by Boiler Feed Pump & Fuel Oil Pump Demolition**
Area C Ground Floor Art Room 006 with Adjacent Storages 006A & 006B	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Metal Stairs	---	---	---	Non-Suspect	
	Sink Undercoating, Gray	N	G	N/A	Non-ACM	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Duct Sealant, Red	N	G	N/A	Non-ACM	
	Fiberglass Pipe & associated Fittings	---	---	---	Non-Suspect	
	Newer Electrical Panel	---	---	---	Non-Suspect	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Plywood Subflooring	---	---	---	Non-Suspect	
	Floor Tile Mastic associated with 12"x 12" Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	

Area C Ground Floor Storage 016	Concrete Ceiling	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Concrete Floor	---	---	---	Non-Suspect	
Area C Ground Floor Storage 015 & Chimney	Concrete Ceiling	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Chimney Hatch	---	---	N/A	Non-ACM	
	Interior Chimney Mortar, Gray	Y	G	N/A	Non-ACM	
	Newer Water Heaters & associated Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Concrete Floor	---	---	---	Non-Suspect	
Area A **1st Floor** **Corridor & Vestibule**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	

Area A **1st Floor** **Corridor & Vestibule**	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	
	Metal Lockers	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	**N**	**G**	**16 SF**	**Contaminated ACM**	**Affected by Radiator Replacement/Demolition; Wall Opening**
	12"x 12" Floor Tile, White Marbled (Top Layer)	**N**	**G**			
	12"x 12" Floor Tile, Blue (Top Layer)	**N**	**G**			
	Plywood Subflooring	**---**	**---**			
	Floor Tile Mastic associated with 9"x 9" Yellow Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
	9"x 9" Floor Tile, Yellow	**N**	**G**			
Area A **1st Floor** **Library & Adjacent Closet 109B**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Glue Dots associated with 1"x 1" Pinhole Acoustical Tile, Brown	N	G	N/A	Non-ACM	
	1'x 1' Acoustical Tile, White	N	G	N/A	Non-ACM	

Area A **1st Floor** **Library & Adjacent Closet 109B**	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	**N**	**G**	**210 SF**	**Contaminated ACM**	**Affected by Casework Demolition; Radiator Replacement/Demolition**
	12"x 12" Floor Tile, White Marbled (Top Layer)	**N**	**G**			
	12"x 12" Floor Tile, Blue (Top Layer)	**N**	**G**			
	Plywood Subflooring	**---**	**---**			
	Floor Tile Mastic associated with 9"x 9" Yellow Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
Area A **1st Floor** **Bathroom 109A**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	

Area A **1st Floor** **Bathroom 109A**	**Concealed Pipe Insulation & associated Fittings in Wall Chase**	**Y**	**---**	**20 LF**	**Assumed ACM**	**Connections affected by Fixtures Replacement/Reconnection to Existing Piping**
	Floor Tile Mastic/Glue associated with 12"x 12" Red Speckled Floor Tile	**N**	**SD**	**70 SF**	**Contaminated ACM**	**Affected by Windows Replacement; Bathroom Heavy Renovation**
	12"x 12" Floor Tile, Red Speckled	**N**	**SD**			
	Floor Tile Mastic associated with 9"x 9" Yellow Floor Tile, Black	**N**	**SD**		**ACM per 2025 AHERA**	
	9"x 9" Floor Tile, Yellow	**N**	**SD**			
Area A **1st Floor** **Special Ed 108 & Adjacent Closet 108A**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Glue Dots associated with 1"x 1" Pinhole Acoustical Tile, Brown	N	G	N/A	Non-ACM	
	1'x 1' Acoustical Tile, White	N	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	

Area A **1st Floor** **Special Ed 108 & Adjacent Closet 108A**	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**30 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition**
Area A **1st Floor** **Boys' Bathroom 107**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Metal Drop Ceiling	---	---	---	Non-Suspect	
	Fiberglass Ceiling Insulation	---	---	---	Non-Suspect	
	Paper associated with Fiberglass Ceiling Insulation, Black	N	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	Duct Sealant, Red	N	G	N/A	Non-ACM	
	Metal Ductwork	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Bathroom Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Urinal Caulking, White	N	D	N/A	Non-ACM	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**60 LF**	**Assumed ACM**	**Connections affected by Fixtures Replacement/Reconnection to Existing Piping**

Area A **1st Floor** **Boys' Bathroom 107**	**Ceramic Tile**	**---**	**---**	**320 SF**	**Contaminated Vermiculite**	**Affected by Windows Replacement; Bathroom Heavy Renovation**
	Ceramic Wall Tile Grout, White	**Y**	**G**			
	Ceramic Wall Tile Backing, Gray	**Y**	**G**		**15% Vermiculite**	
	Ceramic Floor Tile Grout, Gray	Y	G	N/A	Non-ACM	
	Ceramic Floor Tile Backing, Gray	Y	G	N/A	Non-ACM	
	Concealed Waterproofing under Bathroom Floor	**---**	**---**	**190 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Bathroom Heavy Renovation**
Area B **1st Floor** **Corridor, Vestibule & Stairwells**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**60 SF**	**1.4% Chrysotile**	**Affected by Interior Wall Opening; Door Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**480 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	

Area B **1st Floor** **Corridor, Vestibule & Stairwells**	Fiberglass Radiator Insulation	---	---	---	Non-Suspect	Vestibule Radiator
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area B **1st Floor** **Classroom 104 with Adjacent Vestibule & Closet 104A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**180 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Full Gut/Space Reconfiguration; Interior Wall Opening; Air Riser Mechanical Shaft Construction; UV Demolition (with associated Ductwork, Piping, Controls, etc.); DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**1,700 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	

Area B **1st Floor** **Classroom 104 with Adjacent Vestibule & Closet 104A**	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**250 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition; Full Gut/Space Reconfiguration; Interior Wall Opening; Air Riser Mechanical Shaft Construction**
Area B **1st Floor** **Classroom 103 & Adjacent Closet 103A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**75 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Full Gut/Space Reconfiguration; Interior Wall Opening; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**1,050 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**30 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	

Area B **1st Floor** **Classroom 103 & Adjacent Closet 103A**	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**170 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition; Air Riser Mechanical Shaft Construction**
Area B **1st Floor** **Classroom 102 & Adjacent Closet 102A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**110 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Full Gut/Space Reconfiguration; Interior Wall Opening; Air Riser Mechanical Shaft Construction; UV Demolition (with associated Ductwork, Piping, Controls, etc.); DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**1,350 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	

Area B **1st Floor** **Classroom 102 & Adjacent Closet 102A**	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**215 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition; Full Gut/Space Reconfiguration; Interior Wall Opening; Air Riser Mechanical Shaft Construction**
Area B **1st Floor** **Classroom 105 & Adjacent Vestibule**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**165 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Interior Wall Opening; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Pipe Chase Opening**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**102 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**60 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	

Area B **1st Floor** **Classroom 105 & Adjacent Vestibule**	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**95 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Sink Cabinet Demolition**
Area B **1st Floor** **Secretary 106 & Principal's Office 106A with Adjacent Closet 106C**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**45 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Air Riser Mechanical Shaft Construction; UV Demolition (with associated Ductwork, Piping, Controls, etc.)**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**60 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Interior Window Caulking, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	

Area B **1st Floor** **Secretary 106 & Principal's Office 106A with Adjacent Closet 106C**	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**6 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Air Riser Mechanical Shaft Construction**
Area B **1st Floor** **Security & Intervention**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**12 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; Pipe Chase Opening**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**56 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**10 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**8 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Sink Cabinet Demolition**

Area B **1st Floor** **Classroom 101 with Adjacent Vestibule & Closet 101A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**140 SF**	**1.4% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Pipe Chase Opening**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**50 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**45 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Sink Cabinet Demolition; Air Riser Mechanical Shaft Construction**

Area C 1st Floor Corridor	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area C **1st Floor Gym/Cafe/Auditorium with Adjacent Kitchen & Storage (Originally Served as Gym)**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	Glue Dots associated with 1'x 1' Pinhole Ceiling Tile, Brown	N	G	N/A	Non-ACM	
	1'x 1' Pinhole Ceiling Tile, White	N	G	N/A	Non-ACM	
	Metal Pipes	---	---	---	Non-ACM	
	Metal Conduits	---	---	---	Non-Suspect	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	

Area C **1st Floor** **Gym/Cafe/Auditorium with Adjacent Kitchen & Storage (Originally Served as Gym)**	Metal Kitchen Panels & Elements	---	---	---	Non-Suspect	
	Metal Kitchen Sinks & Fixtures	---	---	---	Non-Suspect	
	Glue associated with Gym Wall Pads, Beige	N	G	N/A	Non-ACM	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**5 LF**	**Assumed ACM**	**Connections affected by Fixtures Replacement/Reconnection to Existing Piping**
Area C **1st Floor** **Gym/Cafe/Auditorium with Adjacent Kitchen & Storage (Originally Served as Gym)**	Metal Radiator Covers	---	---	---	Non-Suspect	
	Concealed Corrugated Radiator Insulation, White/Gray	**Y**	**G**	**600 SF**	**36% Chrysotile**	**Affected by Radiator Replacement/Demolition**
	Stage Curtain	N	G	N/A	Assumed ACM	Not Affected by SOW
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	N	---	---	Assumed ACM	Not Affected by SOW
	Concealed Asphalt Mastic associated with Wood Floor Sleepers	N	---	---		
Area A **2nd Floor** **Corridor & Vestibule**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	

Area A **2nd Floor** **Corridor & Vestibule**	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	**N**	**G**	**14 SF**	**Contaminated ACM**	**Affected by Radiator Replacement/Demolition; Wall Opening**
	12"x 12" Floor Tile, White Marbled (Top Layer)	**N**	**G**			
	12"x 12" Floor Tile, Blue (Top Layer)	**N**	**G**			
	Plywood Subflooring	**---**	**---**			
	Floor Tile Mastic associated with 9"x 9" Yellow Floor Tile, Black (Bottom Layer)	**N**	**G**		**ACM per 2025 AHERA**	
	9"x 9" Floor Tile, Yellow	**N**	**G**			
	Concrete Slab	---	---	---	Non-Suspect	
Area A **2nd Floor** **Classroom 211 & Adjacent Closet 211A**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	

Area A **2nd Floor** **Classroom 211 & Adjacent Closet 211A**	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	**Affected by Pipes/Risers Demolition**
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**106 SF**	**Assumed ACM**	**Affected by Windows Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition**
Area A **2nd Floor** **Classroom 210 & Adjacent Closet 210A**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	

Area A **2nd Floor** **Classroom 210 & Adjacent Closet 210A**	Metal Pipes	---	---	---	Non-Suspect	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	**Affected by Pipes/Risers Demolition**
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**80 SF**	**Assumed ACM**	**Affected by Windows Replacement/Demolition; Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition**
Area A **2nd Floor** **Girls' Bathroom 209**	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Metal Drop Ceiling	---	---	---	Non-Suspect	
	Fiberglass Ceiling Insulation	---	---	---	Non-Suspect	
	Paper associated with Fiberglass Ceiling Insulation, Black	N	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	Duct Sealant, Red	N	G	N/A	Non-ACM	
	Metal Ductwork	---	---	---	Non-Suspect	

Area A **2nd Floor** **Girls' Bathroom 209**	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Bathroom Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Concealed Pipe Insulation & associated Fittings in Wall Chase	**Y**	**---**	**40 LF**	**Assumed ACM**	**Connections affected by Fixtures Replacement/Reconnection to Existing Piping**
	Ceramic Tile	**---**	**---**	**450 SF**	**Contaminated Vermiculite**	**Affected by Windows Replacement; Radiator Replacement/Demolition; Bathroom Heavy Renovation**
	Ceramic Wall Tile Grout, White	**Y**	**G**			
	Ceramic Wall Tile Backing, Gray	**Y**	**G**		**15% Vermiculite**	
	Ceramic Floor Tile Grout, Gray	Y	G	N/A	Non-ACM	
	Ceramic Floor Tile Backing, Gray	Y	G	N/A	Non-ACM	
	Concealed Waterproofing under Bathroom Floor	**---**	**---**	**220 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Bathroom Heavy Renovation**
Area B **2nd Floor** **Corridor & Stairwells**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**16 SF**	**3.5% Chrysotile**	**Affected by Door Demolition; Interior Wall Opening; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**196 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	

Area B **2nd Floor** **Corridor & Stairwells**	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	G	N/A	Non-ACM	
	Concrete Masonry Unit	---	---	---	Non-Suspect	
	Concrete Masonry Unit Mortar, Gray	Y	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	Concrete Slab	---	---	---	Non-Suspect	
Area B **2nd Floor** **Classroom 206 with Adjacent Closets 206A & 206C**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**102 SF**	**3.5% Chrysotile**	**Affected by: Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Air Riser Mechanical Shaft Construction; Interior Wall Demolition; Windows Replacement; Electrical Panel Relocation; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**260 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	

Area B **2nd Floor** **Classroom 206 with Adjacent Closets 206A & 206C**	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**85 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition; Interior Wall Opening; Air Riser Mechanical Shaft Construction**
Area B **2nd Floor** **Classroom 205 & Adjacent Closet 205A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**120 SF**	**3.5% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**70 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	

Area B **2nd Floor** **Classroom 205 & Adjacent Closet 205A**	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**95 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition**
Area B **2nd Floor** **Classroom 203 with Adjacent Closets 203A & 203B**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**75 SF**	**3.5% Chrysotile**	**Affected by: Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Air Riser Mechanical Shaft Construction; Interior Wall Demolition; Windows Replacement; Electrical Panel Relocation; Door Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**220 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	

Area B **2nd Floor** **Classroom 203 with Adjacent Closets 203A & 203B**	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**125 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition; Interior Wall Opening; Air Riser Mechanical Shaft Construction; Door Demolition**
Area B **2nd Floor** **Classroom 207 & Adjacent Closet 207A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**70 SF**	**3.5% Chrysotile**	**Affected by: Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Windows Replacement; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**285 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Beige	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	

Area B **2nd Floor** **Classroom 207 & Adjacent Closet 207A**	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**110 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition**
Area B **2nd Floor** **Speech 208B**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**105 SF**	**3.5% Chrysotile**	**Affected by: UV Demolition (with associated Ductwork, Piping, Controls, etc.); Interior Wall Demolition; Full Gut/Space Reconfiguration; Door Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**200 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	

Area B **2nd Floor** **Speech 208B**	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**95 SF**	**Assumed ACM**	**Affected by Full Gut/Space Reconfiguration**
Area B **2nd Floor** **Multi-Purpose Room 200 & Adjacent Closet 200A**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**80 SF**	**3.5% Chrysotile**	**Affected by: Radiator Replacement/Demolition; UV Demolition (with associated Ductwork, Piping, Controls, etc.); Air Riser Mechanical Shaft Construction; Windows Replacement; Door Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**200 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Carpet Tile	---	---	---	Non-Suspect	
	Carpet Tile Glue, Gray	N	G	N/A	Non-ACM	

Area B **2nd Floor** **Multi-Purpose Room 200 & Adjacent Closet 200A**	Wood Floor	---	---	---	Non-Suspect	
	Concealed Felt Paper under Wood Floor	**N**	**---**	**40 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Door Demolition; Air Riser Mechanical Shaft Construction**
Area B **2nd Floor** **Classroom 202**	**Ceiling Plaster, Brown Coat**	**Y**	**G**	**50 SF**	**3.5% Chrysotile**	**Affected by Window Replacement; Radiator Replacement/Demolition; DOAS Installation**
	Ceiling Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	Wall Plaster, Brown Coat	**Y**	**G**	**250 SF**	**2% Chrysotile**	
	Wall Plaster, White Coat	**Y**	**G**		**Contaminated ACM**	
	2'x 4' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Sink Undercoating, Gray	N	G	N/A	Non-ACM	
	Rubber Electrical Wiring Insulation	---	---	---	Non-Suspect	
	Metal Conduits	---	---	---	Non-Suspect	
	Metal Pipes	---	---	---	Non-Suspect	
	Fiberglass Pipe Insulation & associated Fittings	---	---	---	Non-Suspect	
	Unit Ventilator	---	---	---	Non-Suspect	
	Metal Ductwork	---	---	---	Non-Suspect	
	Radiator Insulation, Brown	N	G	N/A	Non-ACM	
	Wood Baseboard	---	---	---	Non-Suspect	
	Wood Floor	---	---	---	Non-Suspect	

Area B 2nd Floor Classroom 202	**Concealed Felt Paper under Wood Floor**	**N**	**---**	**65 SF**	**Assumed ACM**	**Affected by Radiator Replacement/Demolition; Casework Demolition; Sink Cabinet Demolition**
Area C 2nd Floor Corridor/Print Room	Ceiling Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Ceiling Plaster, White Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, Brown Coat	Y	G	N/A	Non-ACM	
	Wall Plaster, White Coat	Y	G	N/A	Non-ACM	
	2'x 2' Ceiling Tile Fissured, Gray	N	G	N/A	Non-ACM	
	Baseboard Glue associated with 4" Black Baseboard, White	N	G	N/A	Non-ACM	
	4" Baseboard, Black	N	G	N/A	Non-ACM	
	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile, Gray	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, White Marbled	N	G	N/A	Non-ACM	
	12"x 12" Floor Tile, Blue	N	G	N/A	Non-ACM	
Area B Attic	Wood Roof Deck	---	---	---	Non-Suspect	
	Wood Structural Elements	---	---	---	Non-Suspect	
	Metal Drainpipe	---	---	---	Non-Suspect	
	Metal Electrical Conduit	---	---	---	Non-Suspect	
	Debris between Joists, Gray	**Y**	**SD**	**10 SF**	**3.8% Chrysotile**	
	Brick	---	---	---	Non-Suspect	
	Brick Mortar, Gray	Y	---	---	Non-ACM	

Area B Attic	Fiberglass Attic Insulation	---	---	---	Non-Suspect	
	Exposed Ceiling Plaster, Brown Coat	**Y**	**G**	**350 SF**	**3.5% Chrysotile**	**From Floor Below Affected by Air Riser Mechanical Shaft Construction; DOAS Installation**
Area B Sloped EPDM Roof	**Roofing System Materials**	**N**	**G**	**22 SF**	**Assumed ACM**	**Affected by Roof Exhaust Air Fans Construction**
	Flashing/Tar associated with Roofing System	**N**	**G**	**8 SF**		
Area B Sloped Asphalt Shingle Roof	**Roof Asphalt Shingle**	**N**	**G**	**120 SF**	**Assumed ACM**	**Affected by Removal of Roof Portion to Create Opening for Elevator**
	Concealed Felt Paper under Roof Asphalt Shingle	**N**	**G**	**120 SF**		
	Roof Flashing/Tar	**N**	**G**	**10 SF**		
	Roof Drip Edge Flashing/Tar	**N**	**G**	**10 SF**		
Area C Sloped Asphalt Shingle Roof	**Roof Asphalt Shingle**	**N**	**G**	**10 SF**	**Assumed ACM**	**Affected by Chimney Demolition**
	Concealed Felt Paper under Roof Asphalt Shingle	**N**	**G**	**10 SF**		
	Roof Flashing/Tar	**N**	**G**	**25 SF**		
	Roof Drip Edge Flashing/Tar	**N**	**G**	**10 SF**		

Bold = Positive for ACM NAD = No Asbestos Detected
Condition Definitions:
Good (G): None/Minimal apparent damage to ACM
Damaged (D): Up to 10% localized damage or up to 25% of the entire ACM is damaged
Significantly Damaged (SD): Over 10% localized damage or over 25% of the entire ACM is damaged
NS – Non-Suspect Material
*** Assumed ACM - to be investigated/sampled during construction**
**** Plywood layer to be assumed in the multi-layer flooring systems**

B. LEAD-BASED PAINT

The following suspect surfaces were tested for lead content:

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
1	Calibration Check @ 1.0	---	---	---	---	1.0
2	Calibration Check @ 1.0	---	---	---	---	0.9
3	Calibration Check @ 1.0	---	---	---	---	0.8
4	Calibration Check @ 0.0	---	---	---	---	0.0
5	Calibration Check @ 0.0	---	---	---	---	0.0
6	Calibration Check @ 0.0	---	---	---	---	0.0
7	Area B- 2nd Floor - Closet	Door Frame	Beige	Wood	Intact	0.3
8	Area B- 2nd Floor - Closet	Door	Beige	Wood	Intact	0.4
9	Area B- 2nd Floor - Closet	Wall	White	Sheet Rock	Intact	0.2
10	Area B- 2nd Floor - Closet	Electrical Conduit	White	Metal	Intact	0.3
11	Area B- 2nd Floor - Closet	Cove Base	Beige	Wood	Intact	0.1
12	Area B- 2nd Floor - Closet	Wall	White	Sheet Rock	Intact	0.2
13	Area B- 2nd Floor - Closet	Wall	White	Sheet Rock	Intact	0.0
14	Area B- 2nd Floor - Closet	Cabinet	White	Wood	Intact	0.0
15	Area B- 2nd Floor - Closet	Wall	Blue	Sheet Rock	Intact	0.0
16	Area B- 2nd Floor - Closet	Floor	Varnish	Wood	Intact	0.1
17	Area B- 2nd Floor - Closet	Ceiling Grid	White	Metal	Intact	0.1
18	Area A- 2nd Floor- Girls Bathroom 209	Door Frame	Beige	Wood	Intact	0.6
19	Area A- 2nd Floor- Girls Bathroom 209	Door	Beige	Wood	Intact	0.2
20	Area A- 2nd Floor- Girls Bathroom 209	Upper Wall	White	Plaster	Intact	0.0
21	Area A- 2nd Floor- Girls Bathroom 209	Lower Wall	Pink	Ceramic Tile	Intact	-0.2
22	Area A- 2nd Floor- Girls Bathroom 209	Upper Wall	White	Plaster	Intact	0.2
23	Area A- 2nd Floor- Girls Bathroom 209	Lower Wall	Pink	Ceramic Tile	Intact	0.1
24	Area A- 2nd Floor- Girls Bathroom 209	Upper Wall	White	Plaster	Intact	-0.2
25	Area A- 2nd Floor- Girls Bathroom 209	Lower Wall	Pink	Ceramic Tile	Intact	0.0
26	Area A- 2nd Floor- Girls Bathroom 209	Upper Wall	White	Plaster	Intact	0.1
27	Area A- 2nd Floor- Girls Bathroom 209	Lower Wall	Pink	Ceramic Tile	Intact	-0.1
28	Area A- 2nd Floor- Girls Bathroom 209	Window Sill	Beige	Wood	Intact	0.4

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
29	Area A- 2nd Floor- Girls Bathroom 209	Window Frame	Beige	Metal	Intact	0.6
30	Area A- 2nd Floor- 211A Closet	Door Frame	Yellow	Wood	Fair	0.8
31	**Area A- 2nd Floor- 211A Closet**	**Wall**	**White**	**Plaster**	**Fair**	**8.4**
32	**Area A- 2nd Floor- 211A Closet**	**Door Frame**	**Yellow**	**Wood**	**Fair**	**1.1**
33	**Area A- 2nd Floor- 211A Closet**	**Wall**	**White**	**Plaster**	**Fair**	**7.2**
34	Area A- 2nd Floor- 211A Closet	Cove Base	Yellow	Wood	Fair	0.6
35	Area A- 2nd Floor- 211A Closet	Cove Base	Yellow	Wood	Fair	0.8
36	**Area A- 2nd Floor- 211A Closet**	**Wall**	**White**	**Plaster**	**Fair**	**7.3**
37	**Area A- 2nd Floor- 211A Closet**	**Window Frame**	**Beige**	**Wood**	**Intact**	**1.2**
38	**Area A- 2nd Floor- 211A Closet**	**Window Sill**	**Beige**	**Wood**	**Intact**	**1.1**
39	Area A- 2nd Floor- 211A Closet	Duct Work	White	Metal	Intact	-0.1
40	**Area A- 2nd Floor- 211A Closet**	**Wall**	**White**	**Plaster**	**Fair**	**7.9**
41	Area A- 2nd Floor- 211A Closet	Floor	Varnish	Wood	Intact	0.1
42	Area A- 2nd Floor- 211A Closet	Ceiling Grid	Gray	Metal	Intact	0.0
43	Area B- 2nd Floor- Rm 203	Door Frame	Beige	Wood	Intact	0.6
44	Area B- 2nd Floor- Rm 203	Door	Beige	Wood	Intact	0.3
45	**Area B- 2nd Floor- Rm 203**	**Wall**	**Blue**	**Plaster**	**Intact**	**2.9**
46	Area B- 2nd Floor- Rm 203	Cove Base	Beige	Wood	Intact	0.4
47	Area B- 2nd Floor- Rm 203	Window Frame	White	Metal	Intact	0.2
48	Area B- 2nd Floor- Rm 203	Window Sill	Beige	Wood	Intact	0.3
49	**Area B- 2nd Floor- Rm 203**	**Wall**	**White**	**Plaster**	**Intact**	**4.7**
50	**Area B- 2nd Floor- Rm 203**	**Wall**	**White**	**Plaster**	**Intact**	**4.9**
51	Area B- 2nd Floor- Rm 203	Radiator Cover	Beige	Metal	Intact	0.3
52	Area B- 2nd Floor- Rm 203	Floor	Varnish	Wood	Intact	-0.1
53	Area B- 2nd Floor- Rm 203	Ceiling Grid	Galvanised	Metal	Intact	0.1
54	Area B- 2nd Floor- Hallway	Door Frame	Beige	Metal	Intact	0.2
55	Area B- 2nd Floor- Hallway	Door	Beige	Metal	Intact	0.0
56	**Area B- 2nd Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**6.8**
57	Area B- 2nd Floor- Hallway	Cove Base	Black	Plaster	Intact	0.6
58	**Area B- 2nd Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**7.2**
59	**Area B- 2nd Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**6.9**
60	Area A- 2nd Floor- Rm 211	Door Frame	Beige	Wood	Intact	0.5
61	Area A- 2nd Floor- Rm 211	Door	Beige	Wood	Intact	0.4
62	Area A- 2nd Floor- Rm 211	**Wall**	**White**	**Plaster**	**Intact**	**7.1**
63	Area A- 2nd Floor- Rm 211	Cabinet	Beige	Wood	Intact	0.2

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
64	**Area A- 2nd Floor- Rm 211**	**Wall**	**White**	**Plaster**	**Intact**	**6.8**
65	**Area A- 2nd Floor- Rm 211**	**Wall**	**White**	**Plaster**	**Intact**	**7.0**
66	Area A- 2nd Floor- Rm 211	Window Frame	Beige	Wood	Intact	0.3
67	Area A- 2nd Floor- Rm 211	Window Sill	Beige	Wood	Intact	0.2
68	Area A- 2nd Floor- Rm 211	Radiator Cover	Beige	Metal	Intact	0.2
69	**Area A- 2nd Floor- Rm 211**	**Wall**	**White**	**Plaster**	**Intact**	**7.3**
70	Area A- 2nd Floor- Rm 211	Floor	Varnish	Wood	Intact	0.2
71	Area A- 2nd Floor- Rm 211	Ceiling Grid	Galvanised	Metal	Intact	0.1
72	Area B- 1st Floor- Hallway	Door Frame	Beige	Metal	Intact	0.3
73	Area B- 1st Floor- Hallway	Door	Beige	Metal	Intact	0.2
74	Area B- 1st Floor- Hallway	Wall	White	Plaster	Intact	-0.4
75	**Area B- 1st Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**12.3**
76	Area B- 1st Floor- Hallway	Cove Base	Black	Plaster	Intact	0.5
77	Area B- 1st Floor- Hallway	Wall	White	Plaster	Intact	-0.5
78	**Area B- 1st Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**13.9**
79	Area B- 1st Floor- Rm 104	Door Frame	Beige	Wood	Intact	0.8
80	**Area B- 1st Floor- Rm 104**	**Door**	**Beige**	**Wood**	**Intact**	**1.1**
81	Area B- 1st Floor- Rm 104	Cove Base	Beige	Wood	Intact	0.6
82	Area B- 1st Floor- Rm 104	Wall	White	Plaster	Intact	0.4
83	Area B- 1st Floor- Rm 104	Wall	White	Plaster	Intact	0.2
84	Area B- 1st Floor- Rm 104	Window Frame	Beige	Wood	Intact	0.7
85	Area B- 1st Floor- Rm 104	Window Sill	Beige	Wood	Intact	0.8
86	Area B- 1st Floor- Rm 104	Wall	White	Plaster	Intact	0.3
87	Area B- 1st Floor- Rm 104	Radiator Cover	Beige	Metal	Intact	0.2
88	Area B- 1st Floor- Rm 104	Wall	White	Plaster	Intact	0.9
89	Area A- 1st Floor- Hallway	Door Frame	Beige	Metal	Intact	0.0
90	Area A- 1st Floor- Hallway	Door	Beige	Metal	Intact	0.2
91	Area A- 1st Floor- Hallway	Wall	White	Plaster	Intact	0.1
92	**Area A- 1st Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**6.8**
93	**Area A- 1st Floor- Hallway**	**Cove Base**	**Black**	**Plaster**	**Intact**	**1.3**
94	Area A- 1st Floor- Hallway	Radiator Cover	Beige	Metal	Intact	0.0
95	**Area A- 1st Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**6.8**
96	**Area A- 1st Floor- Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**9.0**
97	Area A- 1st Floor- Rm 108	Door Frame	Beige	Wood	Intact	0.3
98	Area A- 1st Floor- Rm 108	Door	Beige	Wood	Intact	0.4

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
99	Area A- 1st Floor- Rm 108	Cabinet	Beige	Wood	Intact	0.5
100	Area A- 1st Floor- Rm 108	Acoustical Tile	White	Wood	Intact	0.2
101	**Area A- 1st Floor- Rm 108**	**Wall**	**White**	**Plaster**	**Intact**	**8.7**
102	**Area A- 1st Floor- Rm 108**	**Wall**	**White**	**Plaster**	**Intact**	**8.6**
103	**Area A- 1st Floor- Rm 108**	**Wall**	**White**	**Plaster**	**Intact**	**7.1**
104	**Area A- 1st Floor- Rm 108**	**Wall**	**White**	**Plaster**	**Intact**	**9.0**
105	Area A- 1st Floor- Rm 108a Toilet	Door Frame	Beige	Wood	Intact	0.7
106	Area A- 1st Floor- Rm 108a Toilet	Door	Beige	Wood	Intact	0.3
107	**Area A- 1st Floor- Rm 108a Toilet**	**Wall**	**White**	**Plaster**	**Intact**	**4.3**
108	**Area A- 1st Floor- Rm 108a Toilet**	**Wall**	**White**	**Plaster**	**Intact**	**5.1**
109	**Area A- 1st Floor- Rm 108a Toilet**	**Shelf**	**Beige**	**Wood**	**Intact**	**1.8**
110	**Area A- 1st Floor- Rm 108a Toilet**	**Window Frame**	**White**	**Wood**	**Intact**	**3.8**
111	**Area A- 1st Floor- Rm 108a Toilet**	**Wall**	**White**	**Plaster**	**Intact**	**4.2**
112	**Area A- 1st Floor- Rm 108a Toilet**	**Wall**	**White**	**Plaster**	**Intact**	**5.1**
113	Area A- 1st Floor- Rm 108a Toilet	Window Frame	Beige	Wood	Intact	0.8
114	Area A- 1st Floor- Rm 108a Toilet	Window Sill	Beige	Wood	Intact	0.7
115	Area A- 1st Floor- Rm 108a Toilet	Radiator Cover	White	Metal	Intact	0.0
116	Area A- 1st Floor- Rm 108a Toilet	Duct Work	White	Metal	Intact	0.1
117	Area A- 1st Floor- Rm 108a Toilet	Toilet Stalls	Beige	Wood	Intact	0.6
118	Area B- Ground Floor- Rm 002	Door Frame	Beige	Wood	Intact	0.3
119	**Area B- Ground Floor- Rm 002**	**Door**	**Beige**	**Wood**	**Intact**	**3.2**
120	**Area B- Ground Floor- Rm 002**	**Wall**	**White**	**Plaster**	**Intact**	**14.3**
121	**Area B- Ground Floor- Rm 002**	**Cove Base**	**Beige**	**Wood**	**Intact**	**13.6**
122	**Area B- Ground Floor- Rm 002**	**Wall**	**White**	**Plaster**	**Intact**	**14.2**
123	**Area B- Ground Floor- Rm 002**	**Window Frame**	**Beige**	**Wood**	**Intact**	**3.1**
124	**Area B- Ground Floor- Rm 002**	**Window Sill**	**Beige**	**Wood**	**Intact**	**3.4**
125	Area B- Ground Floor- Rm 002	Ladder	Black	Metal	Intact	0.1
126	Area B- Ground Floor- Rm 002	Ladder	Yellow	Metal	Intact	0.0
127	Area B- Ground Floor- Rm 002	Radiator Cover	Beige	Metal	Intact	0.1
128	Area B- Ground Floor- Rm 002	**Wall**	**White**	**Plaster**	**Intact**	**12.3**
129	Area B- Ground Floor- Rm 002	Cabinet	White	Metal	Intact	0.0
130	Area B- Ground Floor- Rm 002	Duct Work	White	Metal	Intact	0.1
131	**Area B- Ground Floor- Rm 002**	**Wall**	**White**	**Plaster**	**Intact**	**14.2**
132	**Area B- Ground Floor- Rm 002**	**Door**	**Beige**	**Wood**	**Intact**	**3.4**
133	Area C- Ground Floor - Hallway	Door Frame	Beige	Metal	Intact	0.6

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
134	Area C- Ground Floor - Hallway	Door	Beige	Metal	Intact	0.5
135	Area C- Ground Floor - Hallway	Wall	White	Plaster	Intact	-0.2
136	**Area C- Ground Floor - Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**7.7**
137	**Area C- Ground Floor - Hallway**	**Cove Base**	**Black**	**Plaster**	**Intact**	**1.2**
138	**Area C- Ground Floor - Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**6.2**
139	**Area C- Ground Floor - Hallway**	**Wall**	**White**	**Plaster**	**Intact**	**7.9**
140	Area C- Ground Floor - Hallway	Lower Wall	White	Wood	Intact	0.2
141	Area C- Ground Floor - Rm 106 Art	Door Frame	Beige	Wood	Intact	0.6
142	**Area C- Ground Floor - Rm 106 Art**	**Door**	**Beige**	**Wood**	**Intact**	**1.6**
143	**Area C- Ground Floor - Rm 106 Art**	**Cabinet**	**White**	**Wood**	**Intact**	**3.2**
144	**Area C- Ground Floor - Rm 106 Art**	**Wall**	**White**	**Plaster**	**Intact**	**7.6**
145	**Area C- Ground Floor - Rm 106 Art**	**Wal**	**White**	**Plaster**	**Intact**	**7.2**
146	**Area C- Ground Floor - Rm 106 Art**	**Wall**	**White**	**Plaster**	**Intact**	**7.9**
147	Area C- Ground Floor - Rm 106 Art	Window Frame	Beige	Wood	Intact	0.4
148	Area C- Ground Floor - Rm 106 Art	Window Sill	Beige	Wood	Intact	0.6
149	**Area C- Ground Floor - Rm 106 Art**	**Stair Rail**	**Black**	**Metal**	**Intact**	**4.3**
150	**Area C- Ground Floor - Rm 106 Art**	**Wall**	**White**	**Plaster**	**Intact**	**7.9**
151	Area B-Exterior- Rm 208	Window Frame	White	Metal	Intact	0.3
152	Area B-Exterior- Rm 208	Window Sill	White	Wood	Intact	0.1
153	Area A- Exterior- Rm 210	Window Frame	White	Metal	Intact	0.2
154	Area A- Exterior- Rm 210	Window Sill	White	Wood	Intact	0.4
155	Exterior- O/S Carpentry Room	Stair Rail	Black	Metal	Intact	0.1
156	Exterior- O/S Kitchen Storage	Stair Rail	Black	Metal	Intact	0.2
157	Exterior- Playground	Fence	Black	Metal	Intact	0.1
158	Exterior- Entrance to Carpentry Room	Door	Red	Metal	Intact	0.3
159	Exterior- Entrance to Carpentry Room	Door Frame	Red	Metal	Intact	0.2
160	Exterior- Entrance to Corridor 001	Door	Black	Metal	Intact	0.2
161	Exterior- Entrance to Corridor 001	Door Frame	Red	Metal	Intact	0.1
162	Area A- Exterior- Rm 006	Window Frame	White	Metal	Intact	0.1
163	Area A- Exterior- Rm 006	Window Sill	White	Metal	Intact	0.3
164	Calibration Check @ 1.0	---	---	---	---	0.9
165	Calibration Check @ 1.0	---	---	---	---	0.9
166	Calibration Check @ 1.0	---	---	---	---	0.8
167	Calibration Check @ 0.0	---	---	---	---	0

Test Number	Sample Location	Building Component	Color	Substrate	Condition	Lead Content (mg/cm2)
168	Calibration Check @ 0.0	---	---	---	---	0
169	Calibration Check @ 0.0	---	---	---	---	0

C. PCB-CONTAINING MATERIAL

The PCB screening involved a thorough visual examination of all areas that may be impacted by the Additions and Alternations project at Siwanoy Elementary School. The following suspect materials were sampled and analyzed for PCB content:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
A	Exterior, outside Classroom 007	Exterior Window Caulking, Gray/White	ND
	Exterior, outside Classroom 101		
	Exterior, outside Classroom 203		
B	Ground Floor, Boiler Room	Firestop, Gray	ND
	Ground Floor, Boiler Room		
	Ground Floor, Boiler Room		
C	Ground Floor, Boiler Room	Breeching Sealant, Brown	ND
	Ground Floor, Boiler Room		
	Ground Floor, Boiler Room		
D	2nd Floor, Girls' Bathroom 209	Duct Sealant, Red	ND
	2nd Floor, Girls' Bathroom 209		
	1st Floor, Boys' Bathroom 107		
E	1st Floor, Principal's Office	Interior Window Caulking, White	ND
	1st Floor, Principal's Office		
	1st Floor, Principal's Office		
F	1st Floor, Boys' Bathroom 107	Urinal Caulking, White	ND
	1st Floor, Boys' Bathroom 107		
	1st Floor, Boys' Bathroom 107		

5.0 AREAS NOT ACCESSIBLE

During the inspection the following areas were not accessible:

Spaces within Walls/Floors/Ceilings: WSP conducted this survey using semi- and non-destructive methods. It should be assumed that asbestos containing materials may exist in concealed spaces in walls to access plenum, chases etc. Any suspect materials encountered during work should be sampled for analysis before work continues.

Building Envelope: No destructive sampling was performed on the building envelope. It should be assumed that asbestos, lead and PCB containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

Roof: The roofing materials may contain asbestos. No core samples were taken due to the inaccessibility and safety concerns, relation of the material to the structure and roof warranty.

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM and LBP have been identified during this inspection that may be impacted as part of the proposed Additions and Alternations project at the Siwanoy Elementary School, reported in Section 3.0 of this report, may require complete removal prior to the start of the project.

No PCB were identified in this inspection that may be impacted as part of the proposed Additions and Alternations project at Siwanoy Elementary School.

The ACM, LBP & PCB inspection was conducted at the request of Pelham Public Schools for the proposed Additions and Alternations project at Siwanoy Elementary School. Any change in the scope of work will require further investigation to accurately classify any additional ACM, LBP or PCBs resulting from the modified or updated scope of work.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of WSP's efforts for the environmental inspection work for the proposed Additions and Alternations project at Siwanoy Elementary School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of WSP's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which WSP is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon WSP's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:



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NYS DOL Inspector

Reviewed by:



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Vice President
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APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
SIWANOY ELEMENTARY SCHOOL - ADDITIONS AND ALTERNATIONS
489 SIWANOY PLACE
PELHAM, 10803

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
WSP Sampled on 03/25/2026					
A	1	Ground Fl, Area B, Hallway N	Ceiling Plaster, Brown Coat	1.3% Chrysotile	N/A
	2	Ground Fl, Area B, Hallway C		NA/PS	N/A
	3	Ground Fl, Area B, Hallway S		NA/PS	N/A
	4	Ground Fl, Area B, Custodian Office		NA/PS	N/A
	5	Ground Fl, Area B, Kindergarten 014		NA/PS	N/A
	6	Ground Fl, Area B, Kindergarten 002		NA/PS	N/A
	7	Ground Fl, Area B, Music 009		NA/PS	N/A
B	8	Ground Fl, Area B, Hallway N	Ceiling Plaster, White Coat	NAD	N/A
	9	Ground Fl, Area B, Hallway C		NAD	N/A
	10	Ground Fl, Area B, Hallway S		NAD	N/A
	11	Ground Fl, Area B, Custodian Office		NAD	N/A
	12	Ground Fl, Area B, Kindergarten 014		NAD	N/A
	13	Ground Fl, Area B, Kindergarten 002		NAD	N/A
	14	Ground Fl, Area B, Music 009		NAD	N/A
C	15	Ground Fl, Area B, Hallway C	Waterproofing behind Ceiling Plaster, Black	NAD	NAD
	16	Ground Fl, Area B, Hallway N		NAD	NAD
D	**17**	**Ground Fl, Area B, Hallway N**	**Wall Plaster, Brown Coat**	**NAD**	**N/A**
	18	**Ground Fl, Area B, Hallway C**		**NAD**	**N/A**
	19	**Ground Fl, Area B, Hallway S**		**NAD**	**N/A**
	20	**Ground Fl, Area B, Custodian Office**		**NAD**	**N/A**
	21	**Ground Fl, Area B, Kindergarten 014**		**NAD**	**N/A**
	22	**Ground Fl, Area B, Kindergarten 002**		**2.6% Chrysotile**	**N/A**
	23	**Ground Fl, Area B, Music 009**		**NA/PS**	**N/A**

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
E	24	Ground Fl, Area B, Hallway N	Wall Plaster, White Coat	NAD	N/A
	25	Ground Fl, Area B, Hallway C		NAD	N/A
	26	Ground Fl, Area B, Hallway S		NAD	N/A
	27	Ground Fl, Area B, Custodian Office		NAD	N/A
	28	Ground Fl, Area B, Kindergarten 014		NAD	N/A
	29	Ground Fl, Area B, Kindergarten 002		NAD	N/A
	30	Ground Fl, Area B, Music 009		NAD	N/A
F	31	Ground Fl, Area B, Hallway C	2'x2' Ceiling Tile Fissured, Gray	NAD	NAD
	32	Ground Fl, Area B, Kindergarten 014		NAD	NAD
G	33	Ground Fl, Area B, Storage 010	Brick Mortar, Gray	NAD	N/A
	34	Ground Fl, Area B, Hallway C		NAD	N/A
H	35	Ground Fl, Area B, Storage 010	Terracotta Block Mortar, Gray	NAD	N/A
	36	Ground Fl, Area B, Office 011A		NAD	N/A
I	37	Ground Fl, Area B, Hallway N	CMU Mortar Gray	NAD	N/A
	38	Ground Fl, Area B, Hallway S	CMU Mortar Gray	NAD	N/A
J	**39**	**Ground Fl, Area B, Storage 010**	**Ceiling Cement Coating, Gray**	**1.3% Chrysotile**	**N/A**
	40	**Ground Fl, Area B, Storage 010**		**NA/PS**	**N/A**
	41	**Ground Fl, Area B, Electrical Room**		**NA/PS**	**N/A**
K	42	Ground Fl, Area A, Carpentry	Brick Mortar, Gray	NAD	N/A
	43	Ground Fl, Area A, Boiler Room		NAD	N/A
L	**44**	**1st Fl, Area B, Hallway N**	**Ceiling Plaster, Brown Coat**	**1.4% Chrysotile**	**N/A**
	45	**1st Fl, Area B, Hallway C**		**NA/PS**	**N/A**
	46	**1st Fl, Area B, Hallway S**		**NA/PS**	**N/A**
	47	**1st Fl, Area B, Classroom 105**		**NA/PS**	**N/A**
	48	**1st Fl, Area B, Classroom 104**		**NA/PS**	**N/A**
	49	**1st Fl, Area B, Classroom 103**		**NA/PS**	**N/A**
	50	**1st Fl, Area B, Classroom 101**		**NA/PS**	**N/A**
M	51	1st Fl, Area B, Hallway N	Ceiling Plaster, White Coat	NAD	N/A
	52	1st Fl, Area B, Hallway C		NAD	N/A
	53	1st Fl, Area B, Hallway S		NAD	N/A
	54	1st Fl, Area B, Classroom 105		NAD	N/A
	55	1st Fl, Area B, Classroom 104		NAD	N/A

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NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
M	56	1st Fl, Area B, Classroom 103	Ceiling Plaster, White Coat	NAD	N/A
	57	1st Fl, Area B, Classroom 101		NAD	N/A
N	58	1st Fl, Area A, Hallway S	2'x2' Ceiling Tile Fissured, Gray	NAD	NAD
	59	1st Fl, Area A, Classroom 104		NAD	NAD
O	60	1st Fl, Area B, Closet 102A	2'x4' Ceiling Tile Fissured, Gray	NAD	NAD
	61	1st Fl, Area B, Closet 106C		NAD	NAD
P	62	1st Fl, Area B, Closet 102A	Ceiling Gypsum Board, White	NAD	N/A
	63	1st Fl, Area B, Closet 106C		NAD	N/A
Q	64	1st Fl, Area B, Closet 102A	Ceiling Joint Compound, White	NAD	N/A
	65	1st Fl, Area B, Closet 106C		NAD	N/A
R	66	1st Fl, Area B, Closet 102A	Wall Gypsum Board, White	NAD	N/A
	67	1st Fl, Area B, Closet 106C		NAD	N/A
S	68	1st Fl, Area B, Closet 102A	Wall Joint Compound, White	NAD	N/A
	69	1st Fl, Area B, Closet 106C		NAD	N/A
T	70	1st Fl, Area B, Hallway N	Wall Plaster, Brown Coat	Trace Chrysotile	N/A
	71	1st Fl, Area B, Hallway C		Trace Chrysotile	N/A
	72	1st Fl, Area B, Hallway S		Trace Chrysotile	N/A
	73	1st Fl, Area B, Classroom 105		Trace Chrysotile	N/A
	74	1st Fl, Area B, Classroom 104		Trace Chrysotile	N/A
	75	1st Fl, Area B, Classroom 103		NAD	N/A
	76	1st Fl, Area B, Classroom 101		NAD	N/A
U	77	1st Fl, Area B, Hallway N	Wall Plaster, White Coat	NAD	N/A
	78	1st Fl, Area B, Hallway C		NAD	N/A
	79	1st Fl, Area B, Hallway S		NAD	N/A
	80	1st Fl, Area B, Classroom 105		NAD	N/A
	81	1st Fl, Area B, Classroom 104		NAD	N/A
	82	1st Fl, Area B, Classroom 103		NAD	N/A
	83	1st Fl, Area B, Classroom 101		NAD	N/A
WSP Sampled on 05/05/2026, 05/06/2026 & 05/06/2026					
V	**84**	**2nd Fl, Classroom 202**	**Ceiling Plaster, Brown Coat**	**Trace**	**NA/PS**
	85	**2nd Fl, Classroom 203**		**13.5% Chrysotile**	**NA/PS**
	86	**2nd Fl, Classroom 206**		**NA/PS**	**NA/PS**

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Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
V	**87**	**2nd Fl, Classroom 207**	**Ceiling Plaster, Brown Coat**	**NA/PS**	**NA/PS**
	88	**2nd Fl, Corridor O/S CR 200**		**NA/PS**	**NA/PS**
	89	**2nd Fl, Corridor O/S CR 202**		**NA/PS**	**NA/PS**
	90	**2nd Fl, Corridor O/S CR 207**		**NA/PS**	**NA/PS**
W	91	2nd Fl, Classroom 202	Ceiling Plaster, White Coat	NAD	N/A
	92	2nd Fl, Classroom 203		NAD	N/A
	93	2nd Fl, Classroom 206		NAD	N/A
	94	2nd Fl, Classroom 207		NAD	N/A
	95	2nd Fl, Corridor O/S CR 200		NAD	N/A
	96	2nd Fl, Corridor O/S CR 202		NAD	N/A
	97	2nd Fl, Corridor O/S CR 207		NAD	N/A
X	**98**	**2nd Fl, Classroom 202**	**Wall Plaster, Brown coat**	**0.2% Chrysotile**	**NA/PS**
	99	**2nd Fl, Classroom 203**		**2.0% Chrysotile**	**NA/PS**
	100	**2nd Fl, Classroom 205**		**NA/PS**	**NA/PS**
	101	**2nd Fl, Classroom 206**		**NA/PS**	**NA/PS**
	102	**2nd Fl, Corridor O/S CR 202**		**NA/PS**	**NA/PS**
	103	**2nd Fl, Corridor O/S CR 205**		**NA/PS**	**NA/PS**
	104	**2nd Fl, Corridor O/S CR 208**		**NA/PS**	**NA/PS**
Y	105	2nd Fl, Classroom 202	Wall Plaster, White coat	NAD	N/A
	106	2nd Fl, Classroom 203		NAD	N/A
	107	2nd Fl, Classroom 205		NAD	N/A
	108	2nd Fl, Classroom 206		NAD	N/A
	109	2nd Fl, Corridor O/S CR 202		NAD	N/A
	110	2nd Fl, Corridor O/S CR 205		NAD	N/A
	111	2nd Fl, Corridor O/S CR 208		NAD	N/A
Z	112	2nd Fl, Classroom 200	Carpet Tile Glue, Gray	NAD	NAD
	113			NAD	NAD
A1	114	2nd Fl, Classroom 202	Sink Undercoating, Gray	NAD	NAD
	115	2nd Fl, Classroom 202	Sink Undercoating, Gray	NAD	NAD
B1	116	2nd Fl, Classroom 203	Sink Undercoating, Beige	NAD	NAD
	117	2nd Fl, Classroom 207		NAD	NAD
C1	118	2nd Fl, Classroom 202	Radiator Insulation, Brown	NAD	NAD

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NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
C1	119	2nd Fl, Classroom 206	Radiator Insulation, Brown	NAD	NAD
D1	120	2nd Fl, Classroom 202	Ceiling Gypsum Board, White	NAD	N/A
	121	2nd Fl, Classroom 207		NAD	N/A
E1	122	2nd Fl, Classroom 202	Ceiling Joint Compound, White Marbled	NAD	N/A
	123	2nd Fl, Classroom 207		NAD	N/A
F1	124	2nd Fl, Stairwell B Printer Room	Floor Tile Glue associated with 12"x 12" White Marbled and Blue Floor Tile (Gray)	NAD	NAD
	125	Basement, Corridor o/s library 109		NAD	NAD
G1	126	2nd Fl, Stairwell B Printer Room	12"x 12" Floor Tile, White Marbled	NAD	NAD
	127	Basement, Corridor o/s library 109		NAD	NAD
H1	128	2nd Fl, Stairwell B Printer Room	12"x 12" Floor Tile, Blue	NAD	NAD
	129	Basement, Corridor o/s library 109		NAD	NAD
I1	130	2nd Fl, Stairwell B Printer Room	Baseboard Glue associated 4" Black Baseboard, White	NAD	NAD
	131	2nd Fl, Stairwell A		NAD	0.47% Chrysotile
J1	132	2nd Fl, Stairwell B Printer Room	4" Baseboard, Black	NAD	NAD
	133	2nd Fl, Stairwell A		NAD	NAD
K1	134	Exterior, o/s 007	Exterior Window Caulking, Gray/White	Trace Chrysotile	4.8% Chrysotile
	135	Exterior, o/s 101		Trace Chrysotile	N/A
	136	Exterior, o/s 203		Trace Chrysotile	N/A
L1	137	Area B, Attic	Brick Mortar, Gray	NAD	N/A
	138			NAD	N/A
M1	**139**	**Area B, Attic**	**Debris between Joist, Gray**	**NAD**	**N/A**
	140a			**NAD**	**N/A**
	140b			**3.8% Chrysotile**	**N/A**
N1	141	2nd Fl, Classroom 210	Ceiling Plaster, Brown Coat	NAD	N/A
	142	2nd Fl, Classroom 211		NAD	N/A
	143	2nd Fl, Corridor o/s 210		NAD	N/A
	144	2nd Fl, Corridor o/s 211		NAD	N/A
	145	2nd Fl, Stairwell B Printer Room		NAD	N/A
O1	146	2nd Fl, Classroom 210	Ceiling Plaster, White Coat	NAD	N/A
	147	2nd Fl, Classroom 211		NAD	N/A
	148	2nd Fl, Classroom 210		NAD	N/A
	149	2nd Fl, Classroom 211		NAD	N/A

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NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
O1	150	2nd Fl, Stairwell B Printer Room	Ceiling Plaster, White Coat	NAD	N/A
P1	151	2nd Fl, Classroom 210	Wall Plaster, Brown Coat	NAD	N/A
	152	2nd Fl, Classroom 211		NAD	N/A
	153	2nd Fl, Corridor o/s 210		NAD	N/A
	154	2nd Fl, Corridor o/s 211		NAD	N/A
	155	2nd Fl, Corridor o/s 209		NAD	N/A
	156	2nd Fl, Stairwell B Printer Room, N		NAD	N/A
	157	2nd Fl, Stairwell B Printer Room, S		NAD	N/A
Q1	158	2nd Fl, Classroom 210	Wall Plaster, White Coat	NAD	N/A
	159	2nd Fl, Classroom 211		NAD	N/A
	160	2nd Fl, Corridor o/s 210		NAD	N/A
	161	2nd Fl, Corridor o/s 211		NAD	N/A
	162	2nd Fl, Corridor o/s 209		NAD	N/A
	163	2nd Fl, Stairwell B Printer Room, N		NAD	N/A
	164	2nd Fl, Stairwell B Printer Room, S		NAD	N/A
R1	165	2nd Fl, Classroom 211	Corkboard, Brown	NAD	NAD
	166	1st Fl, Classroom 108		NAD	NAD
S1	167	2nd Fl, Girls' Bathroom 209	Duct Sealant, Red	NAD	NAD
	168	1st Fl, Boys' Bathroom 107		NAD	NAD
T1	169	2nd Fl, Girls' Bathroom 209	Ceramic Wall Tile Grout, White	NAD	N/A
	170	1st Fl, Boys' Bathroom 107		NAD	N/A
U1	**171a**	**2nd Fl, Girls' Bathroom 209**	**Ceramic Wall Tile Backing, Gray**	**15% Vermiculite**	**NA/PS**
	171a	**2nd Fl, Girls' Bathroom 209**		**NAD**	**N/A**
	172a	**1st Fl, Boys' Bathroom 107**		**11% Vermiculite**	**NA/PS**
	172a	**1st Fl, Boys' Bathroom 107**		**NAD**	**N/A**
V1	173	2nd Fl, Girls' Bathroom 209	Ceramic Floor Tile Grout, Gray	NAD	N/A
	174	1st Fl, Boys' Bathroom 107		NAD	N/A
W1	175	2nd Fl, Girls' Bathroom 209	Ceramic Floor Tile Backing, Gray	NAD	N/A
	176	1st Fl, Boys' Bathroom 107		NAD	N/A
X1	177	2nd Fl, Girls' Bathroom 209	Paper associated with Fiberglass Ceiling Insulation, Black	NAD	NAD
	178	1st Fl, Boys' Bathroom 107		NAD	NAD
Y1	179	2nd Fl, Girls' Bathroom 209	Bathroom Radiator Insulation, Brown	NAD	NAD

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Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
Y1	180	1st Fl, Boys' Bathroom 107	Bathroom Radiator Insulation, Brown	NAD	NAD
Z1	181	1st Fl, Gym/Auditorium/Cafe	Ceiling Plaster, Brown Coat	NAD	N/A
	182			NAD	N/A
	183			NAD	N/A
	184			NAD	N/A
	185			NAD	N/A
A2	186	1st Fl, Gym/Auditorium/Café	Ceiling Plaster, White Coat	NAD	N/A
	187			NAD	N/A
	188			NAD	N/A
	189			NAD	N/A
	190			NAD	N/A
B2	191	1st Fl, Gym/Auditorium/Café	Wall Plaster, Brown Coat	NAD	N/A
	192			NAD	N/A
	193			NAD	N/A
	194			NAD	N/A
	195			NAD	N/A
	196			NAD	N/A
	197			NAD	N/A
C2	198	1st Fl, Gym/Auditorium/Café	Wall Plaster White Coat	NAD	N/A
	199			NAD	N/A
	200			NAD	N/A
C2	201	1st Fl, Gym/Auditorium/Café	Wall Plaster White Coat	NAD	N/A
	202			NAD	N/A
	203			NAD	N/A
	204			NAD	N/A
D2	**205**	**1st Fl, Gym/Auditorium/Café**	**Concealed Corrugated Radiator Insulation, White/Gray**	**36.4% Chrysotile**	**N/A**
D2	**206**	**1st Fl, Gym/Auditorium/Café**	**Concealed Corrugated Radiator Insulation, White/Gray**	**NA/PS**	**N/A**
	207			**NA/PS**	**N/A**
E2	208	1st Fl, Gym/Auditorium/Café	Glue Dots associated with 1'x1' Pinhole Ceiling Tile, Brown	NAD	NAD
	209			NAD	NAD
F2	210	1st Fl, Gym/Auditorium/Café	1'x1' Pinhole Ceiling Tile, White	NAD	NAD

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Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
F2	211	1st Fl, Gym/Auditorium/Café	1'x1' Pinhole Ceiling Tile, White	NAD	NAD
G2	212	1st Fl, Gym/Auditorium/Café	Glue associated with Gym Wall Pads, Beige	NAD	NAD
	213			NAD	NAD
H2	214	1st Fl, Principal's Office	Radiator Insulation, Brown	NAD	NAD
	215	1st Fl, Classroom 103		NAD	NAD
I2	216	1st Fl, Principal's Office	Interior Window Caulking, Beige	NAD	NAD
	217	1st Fl, Principal's Office		NAD	NAD
J2	218	1st Fl, Area B Corridor C	Baseboard Glue associated with 4" Black Baseboard, White	NAD	NAD
	219	Basement, Area B Corridor C		NAD	NAD
K2	220	1st Fl, Area B Corridor C	4" Baseboard, Black	NAD	NAD
	221	Basement, Area B Corridor C		NAD	NAD
L2	222	1st Fl, Area B Corridor C	Floor Tile Glue associated with 12"x12" White Marbled and Blue Floor Tile, Gray	NAD	NAD
	223	Basement, Area B Corridor C		NAD	NAD
M2	224	1st Fl, Area B Corridor C	12"x12" Floor Tile, White Marbled	NAD	NAD
	225	Basement, Area B Corridor C		NAD	NAD
N2	226	1st Fl, Area B Corridor C	12"x12" Floor Tile, Blue	NAD	NAD
	227	Basement, Area B Corridor C		NAD	NAD
O2	228	1st Fl, Boys' Bathroom 107	Urinal Caulking, White	NAD	NAD
	229			NAD	NAD
P2	230	1st Fl, Classroom 108	Glue dots associated with 1'x1' Pinhole Acoustical Tile, Brown	NAD	NAD
	231			NAD	NAD
Q2	232	1st Fl, Classroom 108	1'x1' Pinhole Acoustical Tile, White	NAD	NAD
	233			NAD	NAD
R2	234	1st Fl, Classroom 108	Ceiling Plaster, Brown Coat	NAD	N/A
	235	1st Fl, Library 109		NAD	N/A
	236	1st Fl, Corridor o/s 108		NAD	N/A
R2	237	1st Fl, Corridor o/s Library 109	Ceiling Plaster, Brown Coat	NAD	N/A
	238	1st Fl, Stairwell B Vestibule		NAD	N/A
S2	239	1st Fl, Classroom 108	Ceiling Plaster, White Coat	NAD	N/A
	240	1st Fl, Library 109		NAD	N/A
	241	1st Fl, Corridor o/s 108		NAD	N/A
	242	1st Fl, Corridor o/s Library 109		NAD	N/A

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Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
S2	243	1st Fl, Stairwell B Vestibule	Ceiling Plaster, White Coat	NAD	N/A
T2	244	1st Fl, Classroom 107	Wall Plaster, Brown Coat	NAD	N/A
	245	1st Fl, Classroom 108		NAD	N/A
	246	1st Fl, Library 109		NAD	N/A
	247	1st Fl, Corridor o/s 108		NAD	N/A
	248	1st Fl, Corridor o/s Library 109		NAD	N/A
	249	1st Fl, Stairwell B Vestibule		NAD	N/A
	250	1st Fl, Stairwell B Vestibule		NAD	N/A
U2	251	1st Fl, Classroom 107	Wall Plaster, White Coat	NAD	N/A
	252	1st Fl, Classroom 108		NAD	N/A
	253	1st Fl, Library 109		NAD	N/A
	254	1st Fl, Corridor o/s 108		NAD	N/A
	255	1st Fl, Corridor o/s Library 109		NAD	N/A
	256	1st Fl, Stairwell B Vestibule		NAD	N/A
	257	1st Fl, Stairwell B Vestibule		NAD	N/A
V2	258	Exterior, Playground E	Asphalt, Black	NAD	NAD
	259	Exterior, Playground W		NAD	NAD
W2	260	Exterior, Addition C	Stone Mortar, Gray	NAD	N/A
	261	Exterior, Area B		NAD	N/A
X2	262	Exterior, Addition C	Face Brick Mortar, Gray	NAD	N/A
	263	Exterior, Area B		NAD	N/A
Y2	264	Exterior, o/s Carpentry	Old Wood Louver, Gray	NAD	NAD
	265	Exterior, o/s Carpentry		NAD	NAD
Z2	266	Ground Floor, Carpentry	Flange Gasket associated with Boiler Feeder, Brown	NAD	N/A
	267			NAD	N/A
A3	268	Ground Floor, Carpentry	Flange Gasket associated with Pump, Brown	NAD	N/A
	269			NAD	N/A
B3	270	Ground Floor, Chimney	Interior Chimney Mortar, Gray	NAD	N/A
	271			NAD	N/A
C3	272	Ground Floor, Boiler Room	Breeching Sealant, Brown	NAD	NAD
	273			NAD	NAD

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Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
D3	274	Ground Floor, Boiler Room	Firestop, Gray	NAD	NAD
	275			NAD	NAD
E3	276	Ground Floor, Boiler Room	Flange Gasket, Red	NAD	NAD
	277			NAD	NAD
F3	278	Ground Floor, Boiler Room	Flange Gasket, Beige	NAD	NAD
	279			NAD	NAD
G3	280	Ground Floor, Boiler Room	Fire Brick inside Breeching, White	NAD	N/A
	281			NAD	N/A
	282			NAD	N/A
H3	283	Ground Floor, Boiler Room	Rope Gasket associated with Boiler, White	NAD	N/A
	284			NAD	N/A
I3	285	Ground Floor, Art Room 006	Floor Tile Mastic associated with 12”x12” Blue Floor Tile, Black	NAD	NAD
	286	1st Floor, Library 109		NAD	NAD
J3	287	Ground Floor, Art Room 006	12”x12” Floor Tile, Blue	NAD	NAD
	288	1st Floor, Library 109		NAD	NAD
K3	289	Ground Floor, Music Room 009	Leveling Compound, Gray	NAD	N/A
	290	Ground Floor, Lounge 012		NAD	N/A
L3	291	Ground Floor, Music Room 009	Floor Tile Mastic associated with 12”x12” Peach Floor Tile, Black	NAD	NAD
	292	Ground Floor, Classroom 014		NAD	NAD
M3	293	Ground Floor, Music Room 009	12”x12” Floor Tile, Peach	NAD	NAD
	294	Ground Floor, Classroom 014		NAD	NAD

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APPENDIX B:
ASBESTOS BULK SAMPLE FIELD DATA SHEETS WITH CHAIN OF CUSODY & LABORATORY RESULTS

Atlas Environmental Lab, Corp.
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New York, NY 10018
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Bulk Asbestos Report by PLM-TEM

Client: WSP
Collected by: Client
Project Name/No.: SW Boces / Pelham UFSD | TBD
Project Address: Siwanoy Es - 489 Siwanoy Pl., Pelham, NY 10803
Work Area: Interior

Lab ID: BK0326531
Date Received: 3/26/2026
PLM Date Analyzed: 3/27/2026
TEM Date Analyzed: 3/27/2026
Report Date: 3/27/2026

Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	All %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
A-01	BK0326531-1	Center Wing, G FL, Hallway N | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%Hair	93.7%	**1.3%CHRY**		**X**		
A-02	BK0326531-2	Center Wing, G FL, Hallway C | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
A-03	BK0326531-3	Center Wing, G FL, Hallway S | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
A-04	BK0326531-4	Center Wing, G FL, Custodian Office | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
A-05	BK0326531-5	Center Wing, G FL, Kindergarten 014 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
A-06	BK0326531-6	Center Wing, G FL, Kindergarten 002 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
A-07	BK0326531-7	Center Wing, G FL, Music 009 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
B-08	BK0326531-8	Center Wing, G FL, Hallway N | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
B-09	BK0326531-9	Center Wing, G FL, Hallway C | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
B-10	BK0326531-10	Center Wing, G FL, Hallway S | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		

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							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
B-11	BK0326531-11	Center Wing, G FL, Custodian Office | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
B-12	BK0326531-12	Center Wing, G FL, Kindergarten 014 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
B-13	BK0326531-13	Center Wing, G FL, Kindergarten 002 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
B-14	BK0326531-14	Center Wing, G FL, Music 009 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
C-15	BK0326531-15	Center Wing, G FL, Hallway C | Waterproofing behind Ceiling Plaster (Black)	Black, Homogeneous, Non-Fibrous	42.2	36.2	21.5	0%	100%	NAD Inconclusive	NAD		X	X
C-16	BK0326531-16	Center Wing, G FL, Hallway N | Waterproofing behind Ceiling Plaster (Black)	Black, Homogeneous, Non-Fibrous	59.4	28.9	11.6	0%	100%	NAD Inconclusive	NAD		X	X
D-17	BK0326531-17	Center Wing, G FL, Hallway N | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
D-18	BK0326531-18	Center Wing, G FL, Hallway C | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
D-19	BK0326531-19	Center Wing, G FL, Hallway S | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
D-20	BK0326531-20	Center Wing, G FL, Custodian Office | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		

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Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	All %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
D-21	BK0326531-21	Center Wing, G FL, Kindergarten 014 | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
D-22	BK0326531-22	Center Wing, G FL, Kindergarten 002 | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%Hair	92.4%	**2.6%CHRY**		**X**		
D-23	BK0326531-23	Center Wing, G FL, Music 009 | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
E-24	BK0326531-24	Center Wing, G FL, Hallway N | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-25	BK0326531-25	Center Wing, G FL, Hallway C | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-26	BK0326531-26	Center Wing, G FL, Hallway S | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-27	BK0326531-27	Center Wing, G FL, Custodian Office | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-28	BK0326531-28	Center Wing, G FL, Kindergarten 014 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-29	BK0326531-29	Center Wing, G FL, Kindergarten 002 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
E-30	BK0326531-30	Center Wing, G FL, Music 009 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		

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Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	AII %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
F-31	BK0326531-31	Center Wing, G FL, Hallway C | 2'x2' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	22.4	77.2	0.4	0%	100%	**NAD** Inconclusive	**NAD**		X	X
F-32	BK0326531-32	Center Wing, G FL, Kindergarten 014 | 2'x2' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	22.7	77.0	0.3	0%	100%	**NAD** Inconclusive	**NAD**		X	X
G-33	BK0326531-33	Center Wing, G FL, Storage 010 | Brick Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
G-34	BK0326531-34	Center Wing, G FL, Hallway C | Brick Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
H-35	BK0326531-35	Center Wing, G FL, Storage 010 | Terracotta Block Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
H-36	BK0326531-36	Center Wing, G FL, Office 011A | Terracotta Block Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
I-37	BK0326531-37	Center Wing, G FL, Hallway N | CMU Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			5%Wood	95%	**NAD**		X		
I-38	BK0326531-38	Center Wing, G FL, Hallway S | CMU Mortar (Grey)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
J-39	BK0326531-39	Center Wing, G FL, Storage 010 | Ceiling Cement Coating (Grey)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	88.7%	**1.3%CHRY**		X		
J-40	BK0326531-40	Center Wing, G FL, Storage 010 | Ceiling Cement Coating (Grey)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				

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Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	AII %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
J-41	BK0326531-41	Center Wing, G FL, Electrical Room | Ceiling Cement Coating (Grey)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
K-42	BK0326531-42	North Wing, G FL, Carpentry | Brick Mortar (Gey)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
K-43	BK0326531-43	North Wing, G FL, Boiler Room | Brick Mortar (Gey)	Brown, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
L-44	BK0326531-44	Center Wing, 1st FL, Hallway N | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	88.6%	**1.4%CHRY**		**X**		
L-45	BK0326531-45	Center Wing, 1st FL, Hallway C | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
L-46	BK0326531-46	Center Wing, 1st FL, Hallway S | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
L-47	BK0326531-47	Center Wing, 1st FL, Classroom 105 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
L-48	BK0326531-48	Center Wing, 1st FL, Classroom 104 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
L-49	BK0326531-49	Center Wing, 1st FL, Classroom 103 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				
L-50	BK0326531-50	Center Wing, 1st FL, Classroom 101 | Ceiling Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable					**NA/PS**				

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Bulk Asbestos Report by PLM-TEM

Client: WSP
Collected by: Client
Project Name/No.: SW Boces / Pelham UFSD | TBD
Project Address: Siwanoy Es - 489 Siwanoy Pl., Pelham, NY 10803
Work Area: Interior

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Date Received: 3/26/2026
PLM Date Analyzed: 3/27/2026
TEM Date Analyzed: 3/27/2026
Report Date: 3/27/2026

Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	All %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
M-51	BK0326531-51	Center Wing, 1st FL, Hallway N | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-52	BK0326531-52	Center Wing, 1st FL, Hallway C | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-53	BK0326531-53	Center Wing, 1st FL, Hallway S | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-54	BK0326531-54	Center Wing, 1st FL, Classroom 105 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-55	BK0326531-55	Center Wing, 1st FL, Classroom 104 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-56	BK0326531-56	Center Wing, 1st FL, Classroom 103 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
M-57	BK0326531-57	Center Wing, 1st FL, Classroom 101 | Ceiling Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	NAD		X		
N-58	BK0326531-58	Center Wing, 1st FL, Hallway S | 2'x2' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	25.7	71.8	2.5	0%	100%	NAD Inconclusive	NAD		X	X
N-59	BK0326531-59	Center Wing, 1st FL, Classroom 104 | 2'x2' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	18.1	77.2	4.7	0%	100%	NAD Inconclusive	NAD		X	X
O-60	BK0326531-60	Center Wing, 1st FL, Closet 102A | 2'x4' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	24.5	75.2	0.3	0%	100%	NAD Inconclusive	NAD		X	X

Atlas Environmental Lab, Corp.
255 West 36th Street, Suite# 1503
New York, NY 10018
Phone:(212) 563-0400 Fax:(212) 563-0401
www.atlasenvironmentallab.com

Bulk Asbestos Report by PLM-TEM

Client: WSP
Collected by: Client
Project Name/No.: SW Boces / Pelham UFSD | TBD
Project Address: Siwanoy Es - 489 Siwanoy Pl., Pelham, NY 10803
Work Area: Interior

Lab ID: BK0326531
Date Received: 3/26/2026
PLM Date Analyzed: 3/27/2026
TEM Date Analyzed: 3/27/2026
Report Date: 3/27/2026

Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	All %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
O-61	BK0326531-61	Center Wing, 1st FL, Closet 106C | 2'x4' Ceiling Tile Fissured (Grey)	Grey, Homogeneous, Non-Fibrous	23.9	76.0	0.1	0%	100%	**NAD** Inconclusive	**NAD**		X	X
P-62	BK0326531-62	Center Wing, 1st FL, Closet 102A | Ceiling Gypsum Board	White, Homogeneous, Friable	Not Applicable			5%CELL 5%FBGL	90%	**NAD**		X		
P-63	BK0326531-63	Center Wing, 1st FL, Closet 106C | Ceiling Gypsum Board	White, Homogeneous, Friable	Not Applicable			5%CELL 5%FBGL	90%	**NAD**		X		
Q-64	BK0326531-64	Center Wing, 1st FL, Closet 102A | Ceiling Joint Compound	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
Q-65	BK0326531-65	Center Wing, 1st FL, Closet 106C | Ceiling Joint Compound	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
R-66	BK0326531-66	Center Wing, 1st FL, Closet 102A | Wall Gypsum Board	White, Homogeneous, Friable	Not Applicable			5%CELL 5%FBGL	90%	**NAD**		X		
R-67	BK0326531-67	Center Wing, 1st FL, Closet 106C | Wall Gypsum Board	White, Homogeneous, Friable	Not Applicable			5%CELL 5%FBGL	90%	**NAD**		X		
S-68	BK0326531-68	Center Wing, 1st FL, Closet 102A | Wall Joint Compound	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
S-69	BK0326531-69	Center Wing, 1st FL, Closet 106C | Wall Joint Compound	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
T-70	BK0326531-70	Center Wing, 1st FL, Hallway N | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	~90%	**Trace (<1%)CHRY**		X		

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Bulk Asbestos Report by PLM-TEM

Client: WSP
Collected by: Client
Project Name/No.: SW Boces / Pelham UFSD | TBD
Project Address: Siwanoy Es - 489 Siwanoy Pl., Pelham, NY 10803
Work Area: Interior

Lab ID: BK0326531
Date Received: 3/26/2026
PLM Date Analyzed: 3/27/2026
TEM Date Analyzed: 3/27/2026
Report Date: 3/27/2026

Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	All %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
T-71	BK0326531-71	Center Wing, 1st FL, Hallway C | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	~90%	**Trace (<1%)CHRY**		X		
T-72	BK0326531-72	Center Wing, 1st FL, Hallway S | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	~90%	**Trace (<1%)CHRY**		X		
T-73	BK0326531-73	Center Wing, 1st FL, Classroom 105 | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	~90%	**Trace (<1%)CHRY**		X		
T-74	BK0326531-74	Center Wing, 1st FL, Classroom 104 | Wall Plaster (Brown Coat)	Brown, Homogeneous, Friable	Not Applicable			5%CELL 5%Hair	~90%	**Trace (<1%)CHRY**		X		
T-75	BK0326531-75	Center Wing, 1st FL, Classroom 103 | Wall Plaster (Brown Coat)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
T-76	BK0326531-76	Center Wing, 1st FL, Classroom 101 | Wall Plaster (Brown Coat)	Grey, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
U-77	BK0326531-77	Center Wing, 1st FL, Hallway N | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
U-78	BK0326531-78	Center Wing, 1st FL, Hallway C | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
U-79	BK0326531-79	Center Wing, 1st FL, Hallway S | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		
U-80	BK0326531-80	Center Wing, 1st FL, Classroom 105 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		X		

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Bulk Asbestos Report by PLM-TEM

Client: WSP
Collected by: Client
Project Name/No.: SW Boces / Pelham UFSD | TBD
Project Address: Siwanoy Es - 489 Siwanoy Pl., Pelham, NY 10803
Work Area: Interior

Lab ID: BK0326531
Date Received: 3/26/2026
PLM Date Analyzed: 3/27/2026
TEM Date Analyzed: 3/27/2026
Report Date: 3/27/2026

Client ID#	Lab ID#	Description/ Location	Analyst Description	ORG %	AII %	ASI %	PLM			TEM	Method By ELAP		
							Fibrous%	Non Fibrous%	Asbestos% &Type	Asbestos% &Type	PLM 198.1	PLM NOB 198.6	TEM 198.4
U-81	BK0326531-81	Center Wing, 1st FL, Classroom 104 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
U-82	BK0326531-82	Center Wing, 1st FL, Classroom 103 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		
U-83	BK0326531-83	Center Wing, 1st FL, Classroom 101 | Wall Plaster (White Coat)	White, Homogeneous, Friable	Not Applicable			0%	100%	**NAD**		**X**		

TC/AH

Quantitative Analysis (Semi/Full):Bulk Asbestos Analysis-PLM by EPA 600/M4-82-020 per 40 CFR or ELAP198.1 (friable) and 198.6 (NOB) samples for New York.

NAD=no asbestos detected, NA/PS=Not Analyzed/Positive Stop, Trace=<1%,FBGL=Fiberglass, CELL=Cellulose,CHRY=Chrysotile,Amo=Amosite,CRO=Crocidolite,ANTH=Anthophylite, TRE=Tremolite, ACT=Actinolite, NA=not applicable.

PLM is not consistently reliable in detecting Asbestos in floor coverings and similar non friable organically bound materials. NAD or Trace results by PLM are inconclusive.

TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos containing in NY State.

All samples were prepared and analyzed in accordance with the EPA "TEM Method for Identifying and Quantifying Asbestos in Non-Fibrous Organically Bound Bulk Samples" ELAP 198.4".

ORG%=Ashed Organic%, AII= Acid Insoluble Inorganic%, ASI= Acid Soluble Inorganic%. The measurement of uncertainty available on request.

This "Summary of Analytical Results "shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, ELAP or any agency of the U.S Government. The results relate only to the items tested. This report may not be reproduced, except in full, without the written approval of AEL .Atlas Environmental lab did not collect the analyzed samples and thus accepts no liability with regard to their collection and/or maintenance . AEL relies on client's data. The liability of Atlas Environmental Lab corp with respect to the services charged, shall in no event exceed the amount of the invoice.

NYS-ELAP#11999, NVLAP Lab Code: 500092-0, CT Reg. ID: PH-0154

PLM Analyst: MA/ EM TEM Analyst: VR Approved by:

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PAGE 1 OF 7

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

BK0326531

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☑ 24 HR. ☐ 48 HR. ☐ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
A	01	Center wing, G FL, Hallway N	Ceiling plaster (brown coat)		
	02	C			
	03	S			
	04	Custodian office			
	05	Kindergarten 014			
	06	002			
	07	Music 009			
B	08	Hallway N	Ceiling plaster (white coat)		
	09	C			
	10	S			
	11	Custodian office			
	12	Kindergarten 014			

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)	Date	Time	Received by: (print)	(Sign)	Date	Time	Relinquished by: (print)	(Sign)	Date	Time	Received by: (print)	(Sign)	Date	Time
IVAN GRUJOVIC		03 26 26	1637												
				Sarah Arafan		3/26/26	1645								

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

EMILY Myint Cby Myint 03.27.26 8:15A

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

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TURNAROUND TIME: ☐ 12 HR. ☑ 24 HR. ☐ 48 HR. ☐ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
B	13	Center wing, GFL, Kindergarten 002	Ceiling plaster (white coat)		
↓	14	Music 009			
C	15	Hallway C	Waterproofing behind ceiling plaster (black)		
↓	16	↓ N			
D	17	Hallway N	Wall plaster (brown coat)		
↓	18	↓ C	↓		
↓	19	↓ 9			
↓	20	Custodian office			
↓	21	Kindergarten 014			
↓	22	↓ 002			
↓	23	Music 009	↓ E		
E	24	Hallway N	Wall plaster (white coat)		

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)		
IVAN GRUJOVIC		03.26.26	1637				AM/PM				AM/PM				AM/PM
Sarah Ancona		3.26.26	1645				AM/PM				AM/PM				AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

EMILY MYLNT 03-27-26 8:15A

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

BK0326531

WSP USA, Inc.
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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐48 HR. ☐72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
E	25	Center wing, GFL, Hallway C	Wall plaster (white coat)		
↓	26	S	↓		
↓	27	Custodian office			
↓	28	Kindergarten 014			
↓	29	002			
↓	30	Music 009			
F	31	Hallway C	2'x2' Ceiling tile fissured		
↓	32	Kindergarten 014	(gray)		
G	33	Storage 010	Brick mortar (gray)		
↓	34	Hallway C	↓		
H	35	Storage 010	Terracotta block mortar		
↓	36	Office 011A	(gray)		

CHAIN OF CUSTODY

Relinquished by (print)	(Sign)	Date	Time	Received by (print)	(Sign)	Date	Time
IVAN GRUJOVIC		03/26/26	1637 EDT				
Sarah Arrasen		3/26/26	1645 EDT				

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

EMILY MYINT Received 03-27-26 8:15A

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☑ 24 HR. ☐ 48 HR. ☐ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
J	37	Center wing, GFL, Hallway N	CMU mortar (gray)		
↓	38	S	↓		
J	39	Storage 010	Ceiling cement coating		
↓	40	↓	(gray)		
↓	41	Electrical room	↓		
K	42	North wing, GFL, Carpentry	Brick mortar (gray)		
↓	43	Boiler room			
L	44	Center wing, 1st FL, Hallway N	Ceilang plaster (brown coat)		
↓	45	C	↓		
↓	46	S			
↓	47	Classroom 105			
↓	48	104			

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
IVAN GRUJOVIC		03/26/26	1637								
Received by: (print) Sarah Brown	(Sign)	3/26/26	1645	Received by: (print)	(Sign)			Received by: (print)	(Sign)		

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

EMMY MYINT Emmy Myint 03.27.26 5:15A

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

BK0326531

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐48 HR. ☐72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
L	49	Center wing, 1st Fl, Classroom 103	Ceiling plaster (brown coat)		
↓	50	↓ 101	↓		
M	51	Hallway N	Ceiling plaster (white coat)		
↓	52	C			
	53	S			
	54	Classroom 105			
	55	104			
	56	103			
↓	57	101	↓		
N	58	Hallway S	2'x2' Ceiling tile fissured		
↓	59	Classroom 104	(gray)		
/	/	/	/	/	/

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
IVAN GRUJOVIC		3/26/26	1637 AM/PM				AM/PM				AM/PM
Received by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)		
Sarah Ahmed		3/26/26	1645 AM/PM				AM/PM	EMILY MYINA		03-27-26	8:15 AM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

BK03265531

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐48 HR. ☐72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
O	60	Center wing, 1st Fl, Closet 102A	2'x4' Ceiling tile fissured (gray)		
↓	61	106C			
P	62	102A	Ceiling gypsum board (white)		
↓	63	106C			
Q	64	102A	Ceiling joint compound (white)		
↓	65	106C			
R	66	102A	Wall gypsum board (white)		
↓	67	106C			
S	68	102A	Wall joint compound (white)		
↓	69	106C			
T	70	Hallway N	Wall plaster (brown coat)		
↓	71	C	↓		

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Received by: (print)	(Sign)		
IVAN GRUJOVIC		03/26/26	1637 AM/PM			/ /	AM/PM			/ /	AM/PM			/ /	AM/PM
Sarah Anwar		3/26/26	1645 AM/PM	EMILY MYINT		03/27/26	8:07			/ /	AM/PM			/ /	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD
CLIENT: SW BOCES / Pelham UFSD
PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior
PROPOSED PROJECT: Additions and Alternations (For Proposed Probes)
DATE(S) OF INSPECTION: 3/25/2026
Inspector(s): Ivan Grujovic

BK0326531

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☐ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
T	72	Center wing, 1st Fl, Hallway S	Wall plaster (brown coat)		
↓	73	, Classroom 105	↓		
↓	74	104			
↓	75	103			
↓	76	101			
U	77	Hallway N	Wall plaster (white coat)		
↓	78	C			
↓	79	S			
↓	80	Classroom 105			
↓	81	104			
↓	82	103			
↓	83	101	EMILY MYINT		03 27 26 5:15A

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
IVAN GRUJOVIC		03/26/26	1637 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Sarah Ahmed		3/26/26	1645 AM/PM			/ /	AM/PM			/ /	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

LABORATORY TESTING SERVICES INC. 40-20 22nd St Suite 2 LIC, NY 11101 Phone: (718) 389 3470, Fax: (718) 389 3471

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
84	A	BR	E		2nd Floor, Classroom 202, Ceiling Plaster (Brown Coat)	98.00	TRACE	CH						TRACE
	B	1	F	2										
	C	198.1	G											
26-05-070-01	D		H											
85	A	BR	E		2nd Floor, Classroom 203, Ceiling Plaster (Brown Coat)	94.50	3.5	CH						3.5
	B	1	F	2										
	C	198.1	G											
26-05-070-02	D		H											
86	A		E		2nd Floor, Classroom 206, Ceiling Plaster (Brown Coat)		NA							SAFP
	B		F											
	C		G											
26-05-070-03	D		H											
87	A		E		2nd Floor, Classroom 207, Ceiling Plaster (Brown Coat)		NA							SAFP
	B		F											
	C		G											
26-05-070-04	D		H											
88	A		E		2nd Floor, Corridor O/S CR 200, Ceiling Plaster (Brown Coat)		NA							SAFP
	B		F											
	C		G											
26-05-070-05	D		H											
89	A		E		2nd Floor, Corridor O/S CR 202, Ceiling Plaster (Brown Coat)		NA							SAFP
	B		F											
	C		G											
26-05-070-06	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
90	A		E		2nd Floor, Corridor O/S CR 207, Ceiling Plaster (Brown Coat)		NA							SAFP
	B		F											
	C		G											
26-05-070-07	D		H											
91	A	WH	E		2nd Floor, Classroom 202, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-08	D		H											
92	A	WH	E		2nd Floor, Classroom 203, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-09	D		H											
93	A	WH	E		2nd Floor, Classroom 206, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-10	D		H											
94	A	WH	E		2nd Floor, Classroom 207, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-11	D		H											
95	A	WH	E		2nd Floor, Corridor O/S 200, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-12	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
96	A	WH	E			2nd Floor, Corridor O/S 202, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-13	D		H												
97	A	WH	E			2nd Floor, Corridor O/S 207, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-14	D		H												
98	A	BR	E			2nd Floor, Classroom 202, Wall Plaster (Brown Coat)	99.75	0.25	CH						0.25
	B	1	F												
	C	198.1	G												
26-05-070-15	D		H												
99	A	BR	E			2nd Floor, Classroom 203, Wall Plaster (Brown Coat)	98.00	2	CH						2
	B	1	F												
	C	198.1	G												
26-05-070-16	D		H												
100	A		E			2nd Floor, Classroom 205, Wall Plaster (Brown Coat)		NA							SAFP
	B		F												
	C		G												
26-05-070-17	D		H												
101	A		E			2nd Floor, Classroom 206, Wall Plaster (Brown Coat)		NA							SAFP
	B		F												
	C		G												
26-05-070-18	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis								Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
102 / 26-05-070-19	A		E		2nd Floor, Corridor O/S 202, Wall Plaster (Brown Coat)		NA										SAFP
	B		F														
	C		G														
	D		H														
103 / 26-05-070-20	A		E		2nd Floor, Corridor O/S 205, Wall Plaster (Brown Coat)		NA										SAFP
	B		F														
	C		G														
	D		H														
104 / 26-05-070-21	A		E		2nd Floor, Corridor O/S 208, Wall Plaster (Brown Coat)		NA										SAFP
	B		F														
	C		G														
	D		H														
105 / 26-05-070-22	A	WH	E		2nd Floor, Classroom 202, Wall Plaster (White Coat)	100.00	NAD										NAD
	B	1	F														
	C	198.1	G	ND													
	D		H														
106 / 26-05-070-23	A	WH	E		2nd Floor, Classroom 203, Wall Plaster (White Coat)	100.00	NAD										NAD
	B	1	F														
	C	198.1	G	ND													
	D		H														
107 / 26-05-070-24	A	WH	E		2nd Floor, Classroom 205, Wall Plaster (White Coat)	100.00	NAD										NAD
	B	1	F														
	C	198.1	G	ND													
	D		H														

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
108	A	WH	E		2nd Floor, Classroom 206, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-25	D		H											
109	A	WH	E		2nd Floor, Corridor O/S 202, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-26	D		H											
110	A	WH	E		2nd Floor, Corridor O/S 205, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-27	D		H											
111	A	WH	E		2nd Floor, Corridor O/S 208, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-28	D		H											
112	A	Y	E		2nd Floor, Classroom 200, Carpet Tile Glue (Gray)				17.41	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-29	D		H											
113	A	Y	E		2nd Floor, Classroom 200, Carpet Tile Glue (Gray)				16.27	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-30	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
114	A	GR	E			2nd Floor, Classroom 202, Sink Undercoating (Gray)				36.03	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-31	D		H												
115	A	GR	E			2nd Floor, Classroom 202, Sink Undercoating (Gray)				39.78	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-32	D		H												
116	A	BE	E			2nd Floor, Classroom 203, Sink Undercoating (Beige)				61.43	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-33	D		H												
117	A	BE	E			2nd Floor, Classroom 207, Sink Undercoating (Beige)				63.60	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-34	D		H												
118	A	BR	E			2nd Floor, Classroom 202, Radiator Insulation (Brown)				0.68	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-35	D		H												
119	A	BR	E			2nd Floor, Classroom 206, Radiator Insulation (Brown)				0.40	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-36	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
120	A	BR/WH	E	8	2nd Floor, Classroom 202, Ceiling Gypsum Board (White)	77.00	NAD							NAD
	B	2	F											
	C	198.1	G											
26-05-070-37	D	15	H											
121	A	BR/WH	E	8	2nd Floor, Classroom 207, Ceiling Gypsum Board (White)	62.00	NAD							NAD
	B	2	F											
	C	198.1	G											
26-05-070-38	D	30	H											
122	A	WH	E		2nd Floor, Classroom 202, Ceiling Joint Compound (White)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-39	D		H											
123	A	WH	E		2nd Floor, Classroom 207, Ceiling Joint Compound (White)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-40	D		H											
124	A	GR	E		2nd Floor, Stairwell B (Printer), Floor Tile Glue A/W 12" x 12" White Marbled And Blue Floor Tile (Gray)				13.78	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-41	D		H											
125	A	GR	E		Basement, Corridor O/S Library 109, Floor Tile Glue A/W 12" x 12" White Marbled And Blue Floor Tile (Gray)				13.04	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-42	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
126	A	GR	E		2nd Floor, Stairwell B (Printer), 12" x 12" Floor Tile (White Marbled)				2.69	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-43	D		H											
127	A	GR	E		Basement, Corridor O/S Library 109, 12" x 12" Floor Tile (White Marbled)				3.14	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-44	D		H											
128	A	BL	E		2nd Floor, Stairwell B (Printer), 12" x 12" Floor Tile (Blue)				3.55	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-45	D		H											
129	A	BL	E		Basement, Corridor O/S Library 109, 12" x 12" Floor Tile (Blue)				2.57	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-46	D		H											
130	A	WH	E		2nd Floor, Stairwell B (Printer), Baseboard Glue A/W 4" Black Baseboard (White)				2.60	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-47	D		H											
131	A	WH	E		2nd Floor, Stairwell A, Baseboard Glue A/W 4" Black Baseboard (White)				9.44	NAD		0.47	CH	**0.47**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-48	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
132	A	BK	E		2nd Floor, Stairwell B (Printer), 4' Baseboard (Black)				1.99	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-49	D		H											
133	A	BK	E		2nd Floor, Stairwell A, 4' Baseboard (Black)				2.53	NAD		NAD		**NAD**
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-50	D		H											
134	A	GR	E		Exterior, O/S 007, Exterior Window Caulking (Gray/White)				16.08	TRACE	CH	4.8	CH	**4.8**
	B	1	F											
	C	198.4/6	G											
26-05-070-51	D		H											
135	A	GR	E		Exterior, O/S 101, Exterior Window Caulking (Gray/White)				12.89	TRACE	CH	NA		**SAFP**
	B	1	F											
	C	198.6	G											
26-05-070-52	D		H											
136	A	GR	E		Exterior, O/S 203, Exterior Window Caulking (Gray/White)				15.70	TRACE	CH	NA		**SAFP**
	B	1	F											
	C	198.6	G											
26-05-070-53	D		H											
137	A	BR	E		Central Wing Attic, Brick Mortar (Gray)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G											
26-05-070-54	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
138	A	BR	E		Central Wing Attic, Brick Mortar (Gray)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-55	D		H											
139	A	Lt GR	E		Central Wing Attic, Debris Between Joist (Gray)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-56	D		H											
140	A	Lt GR	E		Central Wing Attic, Debris Between Joist (Gray)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-57a	D		H											
140	A	Dk GR	E		Central Wing Attic, Debris Between Joints (Gray)	91.20	3.8	CH						3.8
	B	1	F	5										
	C	198.1	G											
26-05-070-57b	D		H											
141	A	BR	E		2nd Floor, Classroom 210, Ceiling Plaster (Brown Coat)	97.00	NAD							NAD
	B	1	F	3										
	C	198.1	G	ND										
26-05-070-58	D		H											
142	A	BR	E		2nd Floor, Classroom 211, Ceiling Plaster (Brown Coat)	97.00	NAD							NAD
	B	1	F	3										
	C	198.1	G	ND										
26-05-070-59	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
143	A	BR	E			2nd Floor, Corridor O/S 210, Ceiling Plaster (Brown Coat)	97.00	NAD							NAD
	B	1	F	3											
	C	198.1	G	ND											
26-05-070-60	D		H												
144	A	BR	E			2nd Floor, Corridor O/S 211, Ceiling Plaster (Brown Coat)	97.00	NAD							NAD
	B	1	F	3											
	C	198.1	G	ND											
26-05-070-61	D		H												
145	A	BR	E			2nd Floor, Stairwell B (Printer), Ceiling Plaster (Brown Coat)	97.00	NAD							NAD
	B	1	F	3											
	C	198.1	G	ND											
26-05-070-62	D		H												
146	A	WH	E			2nd Floor, Classroom 210, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-63	D		H												
147	A	WH	E			2nd Floor, Classroom 211, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-64	D		H												
148	A	WH	E			2nd Floor, Corridor O/S 210, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-65	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
149	A	WH	E			2nd Floor, Corridor O/S 211, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-66	D		H												
150	A	WH	E			2nd Floor, Stairwell B (Printer), Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-67	D		H												
151	A	BR	E			2nd Floor, Classroom 210, Wall Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5											
	C	198.1	G	ND											
26-05-070-68	D		H												
152	A	BR	E			2nd Floor, Classroom 211, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-69	D		H												
153	A	BR	E			2nd Floor, Corridor O/S 210, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-70	D		H												
154	A	BR	E			2nd Floor, Corridor O/S 211, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G	ND											
26-05-070-71	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
155	A	BR	E		2nd Floor, Corridor O/S 209, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-72	D		H											
156	A	BR	E		2nd Floor, Stairwell B (Print) N, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-73	D		H											
157	A	BR	E		2nd Floor, Stairwell B (Print) S, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-74	D		H											
158	A	WH	E		2nd Floor, Classroom 210, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-75	D		H											
159	A	WH	E		2nd Floor, Classroom 211, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-76	D		H											
160	A	WH	E		2nd Floor, Corridor O/S 210, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-77	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
161	A	WH	E		2nd Floor, Corridor O/S 211, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-78	D		H											
162	A	WH	E		2nd Floor, Corridor O/S 209, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-79	D		H											
163	A	WH	E		2nd Floor, Stairwell B (Printer) N, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-80	D		H											
164	A	WH	E		2nd Floor, Stairwell B (Printer) S, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
26-05-070-81	D		H											
165	A	BE	E		2nd Floor, Classroom 211, Corkboard (Brown)				16.80	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-82	D		H											
166	A	BE	E		1st Floor, Classroom 108, Corkboard (Brown)				16.72	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-83	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
167	A	BR	E		2nd Floor, Girls' Bathroom 209, Duct Sealant (Red)				8.25	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-84	D		H											
168	A	BR	E		1st Floor, Boys' Bathroom 107, Duct Sealant (Red)				10.06	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-070-85	D		H											
169	A	WH	E		2nd Floor, Girls' Bathroom 209, Ceramic Wall Tile Grout (White)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-86	D		H											
170	A	WH	E		1st Floor, Boys' Bathroom 107, Ceramic Wall Tile Grout (White)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-070-87	D		H											
171	A	BE	E		2nd Floor, Girls' Bathroom 209, Ceramic Wall Tile Backing (Gray)	100.00	15	VERM						15
	B	1	F											
	C	198.1	G	14.8										
26-05-070-88A	D		H											
171	A	BE	E		2nd Floor, Girls' Bathroom 209, Ceramic Wall Tile Backing (Gray)				21.66	NAD		NA		NAD
	B	1	F							Inconclusive				
	C	198.6	G											
26-05-070-88A	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
172	A	BE	E		1st Floor, Boys' Bathroom 107, Ceramic Wall Tile Backing (Gray)	100.00	11	VERM						**11**
	B	1	F											
26-05-070-89A	C	198.1	G	11.1										
	D		H											
172	A	BE	E		1st Floor, Boys' Bathroom 107, Ceramic Wall Tile Backing (Gray)				52.07	NAD		NA		**NAD**
	B	1	F							Inconclusive				
26-05-070-89A	C	198.6	G											
	D		H											
173	A	BR	E		2nd Floor, Girls' Bathroom 209, Ceramic Floor Tile Grout (Gray)	100.00	NAD							**NAD**
	B	1	F											
26-05-070-90	C	198.1	G											
	D		H											
174	A	BR	E		1st Floor, Boys' Bathroom 107, Ceramic Floor Tile Grout (Gray)	100.00	NAD							**NAD**
	B	1	F											
26-05-070-91	C	198.1	G											
	D		H											
175	A	BR	E		2nd Floor, Girls' Bathroom 209, Ceramic Floor Tile Backing (Gray)	100.00	NAD							**NAD**
	B	1	F											
26-05-070-92	C	198.1	G											
	D		H											
176	A	BR	E		1st Floor, Boys' Bathroom 107, Ceramic Floor Tile Backing (Gray)	100.00	NAD							**NAD**
	B	1	F											
26-05-070-93	C	198.1	G											
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # / Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
177	A	BK	E			2nd Floor, Girls' Bathroom 209, Paper A/W Fiberglass Ceiling Insulation (Black)				15.08	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-94	D		H												
178	A	BK	E			1st Floor, Boys' Bathroom 107, Paper A/W Fiberglass Ceiling Insulation (Black)				15.81	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-95	D		H												
179	A	BE	E			2nd Floor, Girls' Bathroom 209, Bathroom Radiator Insulation (Brown)				8.64	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-96	D		H												
180	A	BE	E			1st Floor, Boys' Bathroom 107, Bathroom Radiator Insulation (Brown)				14.82	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-070-97	D		H												
181	A	BR	E			1st Floor, Gym/Auditorium/Café, Ceiling Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5											
	C	198.1	G	ND											
26-05-070-98	D		H												
182	A	BR	E			1st Floor, Gym/Auditorium/Café, Ceiling Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5											
	C	198.1	G	ND											
26-05-070-99	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
183	A	BR	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5										
26-05-070-100	C	198.1	G	ND										
	D		H											
184	A	BR	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5										
26-05-070-101	C	198.1	G	ND										
	D		H											
185	A	BR	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (Brown Coat)	95.00	NAD							NAD
	B	1	F	5										
26-05-070-102	C	198.1	G	ND										
	D		H											
186	A	WH	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-103	C	198.1	G	ND										
	D		H											
187	A	WH	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-104	C	198.1	G	ND										
	D		H											
188	A	WH	E		1st Floor, Gym/Auditorium/Café, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-105	C	198.1	G	ND										
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Clicnt ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
189	A	WH	E			1st Floor, Gym/Auditorium/Café, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-106	C	198.1	G	ND											
	D		H												
190	A	WH	E			1st Floor, Gym/Auditorium/Café, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-107	C	198.1	G	ND											
	D		H												
191	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-108	C	198.1	G	ND											
	D		H												
192	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-109	C	198.1	G	ND											
	D		H												
193	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-110	C	198.1	G	ND											
	D		H												
194	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-111	C	198.1	G	ND											
	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
195	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-112	C	198.1	G	ND											
	D		H												
196	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-113	C	198.1	G	ND											
	D		H												
197	A	BR	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-114	C	198.1	G	ND											
	D		H												
198	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-115	C	198.1	G	ND											
	D		H												
199	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-116	C	198.1	G	ND											
	D		H												
200	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-117	C	198.1	G	ND											
	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
201	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-118	C	198.1	G	ND											
	D		H												
202	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-119	C	198.1	G	ND											
	D		H												
203	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-120	C	198.1	G	ND											
	D		H												
204	A	WH	E			1st Floor, Gym/Auditorium/Café, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F												
26-05-070-121	C	198.1	G	ND											
	D		H												
205	A	GR	E			1st Floor, Gym/Auditorium/Café, Concealed Corrugated Radiator Insulation (White/Gray)	63.60	36	CH						36
	B	1	F												
26-05-070-122	C	198.1	G												
	D		H												
206	A		E			1st Floor, Gym/Auditorium/Café, Concealed Corrugated Radiator Insulation (White/Gray)		NA							SAFP
	B		F												
26-05-070-123	C		G												
	D		H												

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis	Sample Description	% Non-Fibrous Material	% Friable Results	% All	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
207 26-05-070-124	A, B, C, D, E, F, G, H	1st Floor, Gym/Auditorium/Café, Concealed Corrugated Radiator Insulation (White/Gray)		NA				SAFP
208 26-05-070-125	A: BR; B: 1; C: 198.4/6; D, E, F, G, H	1st Floor, Gym/Auditorium/Café, Glue Dots A/W 1' x 1' Pinhole Ceiling Tile (Brown)			46.00	NAD Inconclusive	NAD	NAD
209 26-05-070-126	A: BR; B: 1; C: 198.4/6; D, E, F, G, H	1st Floor, Gym/Auditorium/Café, Glue Dots A/W 1' x 1' Pinhole Ceiling Tile (Brown)			12.31	NAD Inconclusive	NAD	NAD
210 26-05-070-127	A: WH; B: 1; C: 198.4/6; D, E, F, G, H	1st Floor, Gym/Auditorium/Café, 1' x 1' Pinhole Ceiling Tile (White)			10.35	NAD Inconclusive	NAD	NAD
211 26-05-070-128	A: WH; B: 1; C: 198.4/6; D, E, F, G, H	1st Floor, Gym/Auditorium/Café, 1' x 1' Pinhole Ceiling Tile (White)			13.58	NAD Inconclusive	NAD	NAD
212 26-05-070-129	A: Y; B: 1; C: 198.4/6; D, E, F, G, H	1st Floor, Gym/Auditorium/Café, Glue A/W Gym Wall Pads (Beige)			29.75	NAD Inconclusive	NAD	NAD

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
213 26-05-070-130	A	Y	E		1st Floor, Gym/Auditorium/Café, Glue A/W Gym Wall Pads (Beige)				22.14	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
214 26-05-070-131	A	BE	E		1st Floor, Principal's Office, Radiator Insulation (Brown)				0.53	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
215 26-05-070-132	A	BE	E		1st Floor, Classroom 103, Radiator Insulation (Brown)				0.07	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
216 26-05-070-133	A	WH	E		1st Floor, Principal's Office, Interior Window Caulking (Beige)				40.56	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
217 26-05-070-134	A	WH	E		1st Floor, Principal's Office, Interior Window Caulking (Beige)				40.89	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
218 26-05-070-135	A	WH	E		1st Floor, Central Wing Corridor - C, Baseboard Glue A/W 4" Black Baseboard (White)				2.63	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis	Sample Description	% Non-Fibrous Material	% Friable Results	% All	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
219 26-05-070-136	A WH E B 1 F C 198.4/6 G D H	Basement, Central Wing Corridor - C, Baseboard Glue A/W 4" Black Baseboard (White)			2.98	NAD Inconclusive	NAD	**NAD**
220 26-05-070-137	A BK E B 1 F C 198.4/6 G D H	1st Floor, Central Wing Corridor - C, 4" Baseboard (Black)			0.91	NAD Inconclusive	NAD	**NAD**
221 26-05-070-138	A BK E B 1 F C 198.4/6 G D H	Basement, Central Wing Corridor - C, 4" Baseboard (Black)			3.37	NAD Inconclusive	NAD	**NAD**
222 26-05-070-139	A GR E B 1 F C 198.4/6 G D H	1st Floor, Central Wing Corridor - C, Floor Tile Glue A/W 12" x 12" White Marbled And Blue Floor Tile (Gray)			14.54	NAD Inconclusive	NAD	**NAD**
223 26-05-070-140	A GR E B 1 F C 198.4/6 G D H	Basement, Central Wing Corridor - C, Floor Tile Glue A/W 12" x 12" White Marbled And Blue Floor Tile (Gray)			6.11	NAD Inconclusive	NAD	**NAD**
224 26-05-070-141	A GR E B 1 F C 198.4/6 G D H	1st Floor, Central Wing Corridor - C, 12" x 12" Floor Tile (White Marbled)			3.26	NAD Inconclusive	NAD	**NAD**

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
225	A	GR	E		Basement, Central Wing Corridor - C, 12" x 12" Floor Tile (White Marbled)				3.47	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-142	C	198.4/6	G											
	D		H											
226	A	BL	E		1st Floor, Central Wing Corridor - C, 12" x 12" Floor Tile (Blue)				3.44	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-143	C	198.4/6	G											
	D		H											
227	A	BL	E		Basement, Central Wing Corridor - C, 12" x 12" Floor Tile (Blue)				2.26	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-144	C	198.4/6	G											
	D		H											
228	A	BE	E		1st Floor, Boys' Bathroom 107, Urinal Caulking (White)				26.60	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-145	C	198.4/6	G											
	D		H											
229	A	BE	E		1st Floor, Boys' Bathroom 107, Urinal Caulking (White)				5.18	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-146	C	198.4/6	G											
	D		H											
230	A	BR	E		1st Floor, Classroom 108, Glue Dots A/W 1' x 1' Pinhole Acoustical Tile (Brown)				28.47	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-070-147	C	198.4/6	G											
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
231 26-05-070-148	A	BR	E		1st Floor, Classroom 108, Glue Dots A/W 1' x 1' Pinhole Acoustical Tile (Brown)				42.63	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
232 26-05-070-149	A	BR	E		1st Floor, Classroom 108, 1' x 1' Pinhole Acoustical Tile (White)				23.97	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
233 26-05-070-150	A	BR	E		1st Floor, Classroom 108, 1' x 1' Pinhole Acoustical Tile (White)				41.82	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
	D		H											
234 26-05-070-151	A	BR	E		1st Floor, Classroom 108, Ceiling Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
235 26-05-070-152	A	BR	E		1st Floor, Library 109, Ceiling Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
236 26-05-070-153	A	BR	E		1st Floor, Corridor O/S 108, Ceiling Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
237 26-05-070-154	A	BR	E		1st Floor, Corridor O/S Library 109, Ceiling Plaster (Brown Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											
238 26-05-070-155	A	BR	E		1st Floor, Stairwell B Vestibule, Ceiling Plaster (Brown Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											
239 26-05-070-156	A	WH	E		1st Floor, Classroom 108, Ceiling Plaster (White Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											
240 26-05-070-157	A	WH	E		1st Floor, Library 109, Ceiling Plaster (White Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											
241 26-05-070-158	A	WH	E		1st Floor, Corridor O/S 108, Ceiling Plaster (White Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											
242 26-05-070-159	A	WH	E		1st Floor, Corridor O/S Library 109, Ceiling Plaster (White Coat)	100.00	NAD							**NAD**
	B	1	F											
	C	198.1	G	ND										
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
243	A	WH	E		1st Floor, Stairwell B Vestibule, Ceiling Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-160	C	198.1	G	ND										
	D		H											
244	A	BR	E		1st Floor, Classroom 108, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-161	C	198.1	G	ND										
	D		H											
245	A	BR	E		1st Floor, Library 109, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-162	C	198.1	G	ND										
	D		H											
246	A	BR	E		1st Floor, Corridor O/S 107, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-163	C	198.1	G	ND										
	D		H											
247	A	BR	E		1st Floor, Corridor O/S 108, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-164	C	198.1	G	ND										
	D		H											
248	A	BR	E		1st Floor, Corridor O/S Library 109, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-165	C	198.1	G	ND										
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
249 26-05-070-166	A	BR	E		1st Floor, Stairwell B Vestibule, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
250 26-05-070-167	A	BR	E		1st Floor, Stairwell B Vestibule, Wall Plaster (Brown Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
251 26-05-070-168	A	WH	E		1st Floor, Classroom 108, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
252 26-05-070-169	A	WH	E		1st Floor, Library 109, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
253 26-05-070-170	A	WH	E		1st Floor, Corridor O/S 107, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											
254 26-05-070-171	A	WH	E		1st Floor, Corridor O/S 108, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
	C	198.1	G	ND										
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

Client ID # Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
255	A	WH	E		1st Floor, Corridor O/S Library 109, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-172	C	198.1	G	ND										
	D		H											
256	A	WH	E		1st Floor, Stairwell B Vestibule, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-173	C	198.1	G	ND										
	D		H											
257	A	WH	E		1st Floor, Stairwell B Vestibule, Wall Plaster (White Coat)	100.00	NAD							NAD
	B	1	F											
26-05-070-174	C	198.1	G	ND										
	D		H											

LABORATORY TESTING SERVICES INC. 40-20 22nd St Suite 2 LIC, NY 11101 Phone: (718) 389 3470, Fax: (718) 389 3471

BULK ASBESTOS TEST REPORT

Client/Addrcss: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-070	**Date of Report:** 05/08/26	**Date of Analysis:** 05/07/26, 05/08/26	**Date Received:** 05/06/26

PLM ANALYST
J. Nam

PLM-NOB ANALYST
Y. Zhao

TEM-NOB ANALYST
M. Acharya

LABORATORY DIRECTOR
E. Dimitrakas or Assigned Signatory

LABORATORY ACCREDITATION NUMBERS: NVLAP Lab Code 101958-0, NYSDOH ELAP Lab ID 10955, NJDEP NY027

- Samples will be stored for sixty (60) days. LTS Inc. should be notified within this time frame for a true duplicate analysis.
- Above results relate only to samples submitted and analyzed. This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government. Test reports may not be reproduced except in full and with prior approval of LTS Inc.
- The liability of LTS Inc., with respect to the services charged, shall in no event exceed the amount of the invoice.
- Analytical Methodologies: 40 CFR, Part 763, Subpart E, Appendix E/EPA 600.R-93/116, EPA 600/M4-82-020 (Point Count only) and ELAP Methods 198.1, 198.4,198.6.
- NAD: No Asbestos Detected, SAFP: Stopped at First Positive, CH: Chrysotile, AMOS: Amosite, TRE: Tremolite, ANTH: Anthophyllite, ACT: Actinolite, and CRO: Crocidolite.
- Stereomicroscopic Analysis: A: Color, B: Layers, C: Methodology, D: Cellulose, E: Fiberglass, F: Hair, G: Vermiculite, H: OTHER
- Color: BK: Black, BR: Brown, Dk BR: Dark Brown, Lt BR: Light Brown, R BR: Reddish Brown, GR: Gray, Dk GR: Dark Gray, Lt GR: Light Gray, BE: Beige, P: Pink, R: Red, T: Tan, WH: White, Off WH: Off White, Y: Yellow, BL: Blue, CR: Cream, GN: Green, O: Orange, Multi.: Multiple Colors

Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026, 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

	HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
1	V	84	2nd Fl, Classroom 202	Ceiling plaster (brown coat)	C-TrCH, NVD	above GB/JC
2		85	, 203		(+) 3.5% CH, NVD	
3		86	, 206		NA	
4		87	, 207		NA	
5		88	, Corridor o/s CR 200		NA	
6		89	, 202		NA	
7		90	, 207		NA	
8	W	91	, Classroom 202	Ceiling plaster (white coat)	(-) NAD, NVD	
9		92	, 203			
10		93	, 206			
11		94	, 207			
12		95	, Corridor o/s 200			

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 2350 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		~~Received~~ by: (print)	(Sign)	
A. Arinkunmi		5/6/26 23.50 AM/PM			/ / AM/PM	Analyzed Ivan Pang	Ivan Pang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026, 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas B26-05-070

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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☑ 72 HR.

	HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
13	W	96	2nd Fl, Corridor o/s 202	Ceiling plaster (white coat)		(-) NAD, NVD
14	↓	97	↓ 207	↓		↓
15	X	98	Classroom 202	Wall plaster (brown coat)		(+) 0.25% CH, NVD
16	↓	99	↓ 203	↓		(+) 2.0% CH, NVD
17		100	205			NA
18		101	206			NA
19		102	Corridor o/s 202			NA
20		103	205			NA
21		104	208			NA
22	Y	105	Classroom 202	Wall plaster (white coat)		(-) NAD, NVD
23	↓	106	↓ 203	↓		↓
24		107	205			

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	2350 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print)	(Sign)	5/6/26	23 50 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Anatoliy Smolyar	(Sign)	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026, 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
Y	108	2nd Fl, Classroom 206	Wall plaster (white coat)		(-)NAD, NUD
↓	109	, Corridor o/s 202	↓		↓
↓	110	, ↓ 205	↓		↓
↓	111	, ↓ 208	↓		↓
Z	112	, Classroom 200	Carpet tile glue (gray)		(-)NAD (-)NAD
↓	113	, ↓	↓		↓ ↓
A1	114	, 202	Sink undercoating (gray)		(-)NAD (-)NAD
↓	115	, ↓	↓		↓ ↓
B1	116	, 203	Sink undercoating (beige)		(-)NAD (-)NAD
↓	117	, 207	↓		↓ ↓
C1	118	, 202	Radiator insulation (brown)		(-)NAD (-)NAD
↓	119	, ↓ 206	↓		↓ ↓

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 2350 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		Received by: (print)	(Sign)	
A. Arinkumar		5/6/26 23 52 AM/PM			/ / AM/PM	Shanti Pang	Shanti Pang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026, 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-076

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
D1	120	2nd Fl, Classroom 202	Ceiling gypsum board (white)		(-)NAD
↓	121	↓ , 207	↓		↓
E1	122	, 202	Ceiling joint compound (white)		(-)NAD
↓	123	↓ , 207	↓		↓
F1	124	, Stairwell B (Printer)	Floor tile glue a/w 12"x12" white marbled and blue floor tile (grey)		(-)NAD (-)NAD
↓	125	BSMT, Corridor o/s Library 109	↓		↓ ↓
G1	126	2nd Fl, Stairwell B (Printer)	12"x12 floor tile (white marbled)		(-)NAD (-)NAD
↓	127	BSMT, Corridor o/s Library 109	↓		↓ ↓
H1	128	2nd Fl, Stairwell B (Printer)	12"x12" floor tile (blue)		(-)NAD (-)NAD
↓	129	BSMT, Corridor o/s Library 109	↓		↓ ↓
I1	130	2nd Fl, Stairwell B (Printer)	Baseboard glue a/w 4" black baseboard (white)		(-)NAD (-)NAD
↓	131	↓ , Stairwell A	↓		↓ (-)0.47% CH

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26 2350 AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM		Relinquished by: (print)	(Sign)	/ / AM/PM		
Received by: (print) H. Anikeyenko	(Sign)	/ / AM/PM	Received by: (print)	(Sign)	/ / AM/PM		Received by: (print) Ivan Pang	(Sign) Ivan Pang	5/8/26 AM/PM		

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
J1	132	2nd FL, Stairwell B (Printer)	4" Baseboard (black)		(-) MAD (-) MAD
↓	133	↓ , Stairwell A	↓		↓ ↓
K1	134	Exterior, O/S 007	Exterior window caulking (gray/white)		(-) TrCH (+) 4.8% CH
↓	135	↓ , ↓ 101	↓		↓ MA
↓	136	↓ , ↓ 203	↓		↓ MA
L1	137	Central wing Attic	Brick mortar (gray)		(-) MAD
↓	138	↓	↓		↓
M1	139	↓	Debris between joist (gray)		(-) MAD
↓	140	↓	↓		Light CAR (-) MAD Dark CAR (+) 3.75% CH
N1	141	2nd FL, Classroom 210	Ceiling plaster (brown coat)		(-) MAD, NOD
↓	142	↓ , ↓ 211	↓		↓
↓	143	↓ , Corridor O/S 210	↓		↓

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	2350 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print) A. Arutyunyan	(Sign)	5/6/26	23 50 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Ivan Perez	(Sign) Ivan Perez	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
N1	144	2nd Fl, Corridor o/s 211	Ceiling plaster (brown coat)		(-)NAD, NVD
↓	145	, Stairwell B (Printer)	↓		↓
01	146	, Classroom 210	Ceiling plaster (white coat)		(-)NAD, NVD
↓	147	↓ 211	↓		↓
↓	148	, Corridor o/s 210	↓		↓
↓	149	↓ 211	↓		↓
↓	150	, Stairwell B (Printer)	↓		↓
P1	151	, Classroom 210	Wall plaster (brown coat)		(-)NAD, NVD
↓	152	↓ 211	↓		↓
↓	153	, Corridor o/s 210	↓		↓
↓	154	↓ 211	↓		↓
↓	155	↓ 209	↓		↓

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 2350 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		Received by: (print)	(Sign)	
A		5/6/26 2350 AM/PM			/ / AM/PM	Ivan Pang	Ivan Pang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-07-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☒ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
P1	156	2nd Fl, Stairwell B (Print) N	Wall plaster (brown coat)		(-)MAD, NOD
↓	157	↓ S	↓		↓
Q1	158	Classroom 210	Wall plaster (white coat)		(-)MAD, NOD
	159	↓ 211			
	160	Corridor d/s 210			
	161	↓ 211			
	162	↓ 209			
	163	Stairwell B (Printer) N			
↓	164	↓ S	↓		↓
R1	165	Classroom 211	Corkboard (brown)		(-)MAD (-)MAD
↓	166	1st Fl, ↓ 108	↓		↓ ↓
S1	167	2nd Fl, Girls' bathroom 209	Duct sealant (red)		(-)MAD (-)MAD

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)	/ / AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM
IVAN GRUJOVIC		5/6/26 2350						
Received by: (print)	(Sign)	5/6/26 2350 AM/PM	Received by: (print)	(Sign)	/ / AM/PM	Received by: (print) Jian Fang	(Sign) Jian Fang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☑ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
S1	168	1st Fl, Boys' bathroom 107	Duct sealant (red)		(-)NAD (-)NAD
T1	169	2nd Fl, Girls' bathroom 209	Ceramic wall tile grout (white)		(-)NAD
↓	170	1st Fl, Boys' bathroom 107	↓		↓
U1	171	2nd Fl, Girls' bathroom 209	Ceramic wall tile backing (gray)		14.8% Verm (-)NAD
↓	172	1st Fl, Boys' bathroom 107	↓		11.1% Verm. ↓
V1	173	2nd Fl, Girls' bathroom 209	Ceramic floor tile grout (gray)		(-)NAD
↓	174	1st Fl, Boys' bathroom 107	↓		↓
W1	175	2nd Fl, Girls' bathroom 209	Ceramic floor tile backing (gray)		(-)NAD
↓	176	1st Fl, Boys' bathroom 107	↓		↓
X1	177	2nd Fl, Girls' bathroom 209	paper a/w fiberglass ceiling insulation (black)		(-)NAD (-)NAD
↓	178	1st Fl, Boys' bathroom 107	↓		↓ ↓
—	—	—	—	—	—

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	2350 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print)	(Sign)	5/6/26	2350 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Jiani Pang	(Sign) Jiani Pang	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

WSP USA, Inc.
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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☒ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
Y1	179	2nd FL, Girls' bathroom 209	Bathroom radiator insulation (brown)		(-) NAD (-) NAD
↓	180	1st FL, Boys' bathroom 107	↓		↓ ↓
Z1	181	1st FL, Gym/Auditorium/Cafe	Ceiling plaster (brown coat)		(-) NAD, NVD
↓	182	↓	↓		↓
	183				
	184				
↓	185		↓		↓
A2	186		Ceiling plaster (White coat)		(-) NAD, NVD
↓	187	↓	↓		↓
	188				
	189				
↓	190	↓	↓		↓

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 23:50 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		Received by: (print)	(Sign)	
		5/6/26 23:50 AM/PM			/ / AM/PM	Ivan Gruj	Ivan Gruj	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas B26-05-070

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
B2	191	1st FL, Gym/Auditorium/Cafe	Wall plaster (brown coat)	(-) NAD, NVD	
	192				
	193				
	194				
	195				
	196				
	197				
C2	198		Wall plaster (white coat)	(-) NAD, NVD	
	199				
	200				
	201				
	202				

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	2350 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print)	(Sign)	5/6/26	23 50 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Ivani Pang	(Sign) Ivani Pang	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☑ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
C2	203	1st Fl, Gym/Auditorium/Cafe	Wall plaster (white coat)	(-) NAD, NVD	
↓	204	↓	↓	↓	
D2	205		Concealed corrugated radiator insulation (white/gray)	(+) 136.4' L.M	
↓	206	↓	↓	NA	
↓	207	↓	↓	NA	
E2	208		Glue dots a/w 1'x1' pinhole ceiling tile (brown)		(-) NAD (-) NAD
↓	209	↓	↓	↓	↓ ↓
F2	210		1'x1' pinhole ceiling tile (white)		(-) NAD (-) NAD
↓	211	↓	↓	↓	↓ ↓
G2	212		Glue a/w gym wall pads (beige)		(-) NAD (-) NAD
↓	213	↓	↓	↓	↓ ↓
—	—	—	—	—	—

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 2350 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print) A. Arunkumar	(Sign)	5/6/26 2350 AM/PM	Received by: (print)	(Sign)	/ / AM/PM	Received by: (print) Jiaoxi Pang	(Sign) Jiaoxi Pang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

wsp

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

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TURNAROUND TIME: ☒ 12 HR. ☐ 24 HR. ☐ 48 HR. ☒ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES	
H2	214	1st FL, Principal's office	Radiator insulation (brown)		(-) NAD	(-) NAD
↓	215	, Classroom 103	↓		↓	↓
I2	216	, Principal's office	Interior window caulking (beige)		(-) NAD	(-) NAD
↓	217	↓	↓		↓	↓
J2	218	1st FL, Central wing corridor-C	Baseboard glue a/w 4" black baseboard (white)		(-) NAD	(-) NAD
↓	219	BSMT,	↓		↓	↓
K2	220	1st FL,	4" Baseboard (black)		(-) NAD	(-) NAD
↓	221	BSMT,	↓		↓	↓
L2	222	1st FL,	Floor tile glue a/w 12"x12" white marbled and blue floor tile (gray)		(-) NAD	(-) NAD
↓	223	BSMT,	↓		↓	↓
M2	224	1st FL,	12"x12" floor tile (white marbled)		(-) NAD	(-) NAD
↓	225	BSMT,	↓		↓	↓

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM
IVAN GRUJOVIC		5/6/26 2330				/ /				/ /	
Received by: (print) H. Hankumi	(Sign)	5/6/26 2350	AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Liani Pang	(Sign) Liani Pang	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

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TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐ 48 HR. ☎ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
N2	226	1st FL, Central wing corridor-C	12"x12" floor tile (blue)		(-)NAD (-)NAD
↓	227	BSMT,	↓		↓ ↓
O2	228	1st FL, Boys' bathroom 107	Urinal caulking (white)		(-)NAD (-)NAD
↓	229	↓	↓		↓ ↓
P2	230	Classroom 108	Glue dots of w 1'x1' pinhole acoustical tile (brown)		(-)NAD (-)NAD
↓	231	↓	↓		↓ ↓
Q2	232		1'x1' pinhole acoustical tile (white)		(-)NAD (-)NAD
↓	233	↓	↓		↓ ↓
R2	234	Classroom 108	Ceiling plaster (brown coat)	(-)NAD, NVD	
↓	235	Library 109	↓	↓	
↓	236	Corridor o/s 108	↓	↓	
↓	237	Corridor o/s Library 109	↓	↓	

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/6/26 2350 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		~~Received by:~~ (print)	(Sign)	
A. Anikumar		5/6/26 2350 AM/PM			/ / AM/PM	Analyzed Ivan Pang	Ivan Pang	5/8/26 AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

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TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐ 48 HR. ☒ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
R2	238	1st FL, Stairwell B Vestibule	Ceiling plaster (brown coat)	(-) NAD, NVD	
S2	239	Classroom 108	Ceiling plaster (white coat)	(-) NAD, NVD	
	240	Library 109			
	241	Corridor o/s 108			
	242	Corridor o/s Library 109			
	243	Stairwell B Vestibule			
T2	244	Classroom 108	Wall plaster (brown coat)	(-) NAD, NVD	
	245	Library 109			
	246	Corridor o/s 107			
	247	108			
	248	Library 109			
	249	Stairwell B Vestibule			

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	2350 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print)	(Sign)	5/6/26	2350 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) Ivan Perez	(Sign) Ivan Perez	5/8/26	AM/PM

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Analyzed

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/5/2026 ; 5/6/2026

Inspector(s): Ivan Grujovic; Martin Douglas

B26-05-070

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RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐ 48 HR. ☑72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
T2	250	1st Fl, Stairwell B Vestibule	Wall plaster (brown coat)	(-) NAD, NVD	
U2	251	Classroom 108	Wall plaster (white coat)	(-) NAD, NVD	
	252	Library 109			
	253	Corridor o/s 107			
	254	Corridor o/s 108			
	255	Corridor o/s Library 109			
	256	Stairwell B Vestibule			
	257				

CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5/6/26	23:50 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print)	(Sign)	5/6/26	23:50 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	~~Received by:~~ Analyzed (print) Jiani Pang	(Sign) Jiani Pang	5/8/26	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

LABORATORY TESTING SERVICES INC. 40-20 22nd St Suite 2 LIC, NY 11101 Phone: (718) 389 3470, Fax: (718) 389 3471

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
258	A	BK	E			Exterior, Playground E, Asphalt (Black)				91.01	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-01	D		H												
259	A	BK	E			Exterior, Playground W, Asphalt (Black)				92.44	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-02	D		H												
260	A	GR	E			Exterior, Addition C, Stone Mortar (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-03	D		H												
261	A	GR	E			Exterior, Central Wing, Stone Mortar (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-04	D		H												
262	A	GR	E			Exterior, Addition C, Facebrick Mortar (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-05	D		H												
263	A	GR	E			Exterior, Central Wing, Facebrick Mortar (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-06	D		H												

LABORATORY TESTING SERVICES INC. 40-20 22nd St Suite 2 LIC, NY 11101 Phone: (718) 389 3470, Fax: (718) 389 3471

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
264	A	GR	E			Exterior, O/S Carpentry, Old Wood Louver Paint (Gray)				26.13	NAD		TRACE	CH	TRACE
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-07	D		H												
265	A	GR	E			Exterior, O/S Carpentry, Old Wood Louver Paint (Gray)				29.68	NAD		TRACE	CH	TRACE
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-08	D		H												
266	A	BR	E	10		G Floor, Carpentry, Flange Gasket A/W Boiler Feeder (Brown)	30.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-09	D	60	H												
267	A	BR	E	10		G Floor, Carpentry, Flange Gasket A/W Boiler Feeder (Brown)	30.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-10	D	60	H												
268	A	BR	E			G Floor, Carpentry, Flange Gasket A/W Pump (Brown)	0.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-11	D	100	H												
269	A	BR	E			G Floor, Carpentry, Flange Gasket A/W Pump (Brown)	0.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-12	D	100	H												

LABORATORY TESTING SERVICES INC. 40-20 22nd St Suite 2 LIC, NY 11101 Phone: (718) 389 3470, Fax: (718) 389 3471

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # Lab ID #	Stereomicroscope Analysis	Sample Description	% Non-Fibrous Material	% Friable Results	% All	% PLM NOB Results	% TEM NOB Results	% TOTAL Asbestos
270 26-05-080-13	A GR E B 1 F C 198.1 G D H	G Floor, Chimney, Interior Chimney Mortar (Gray)	100.00	NAD				NAD
271 26-05-080-14	A GR E B 1 F C 198.1 G D H	G Floor, Chimney, Interior Chimney Mortar (Gray)	100.00	NAD				NAD
272 26-05-080-15	A BR E B 1 F C 198.4/6 G D H	G Floor, Boiler Room, Breeching Sealant (Brown)			60.41	NAD Inconclusive	NAD	NAD
273 26-05-080-16	A BR E B 1 F C 198.4/6 G D H	G Floor, Boiler Room, Breeching Sealant (Brown)			44.53	NAD Inconclusive	NAD	NAD
274 26-05-080-17	A GR E B 1 F C 198.4/6 G D H	G Floor, Boiler Room, Firestop (Gray)			52.27	NAD Inconclusive	NAD	NAD
275 26-05-080-18	A GR E B 1 F C 198.4/6 G D H	G Floor, Boiler Room, Firestop (Gray)			38.11	NAD Inconclusive	NAD	NAD

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
276	A	R	E		G Floor, Boiler Room, Flange Gasket (Red)				48.52	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-080-19	C	198.4/6	G											
	D		H											
277	A	R	E		G Floor, Boiler Room, Flange Gasket (Red)				32.66	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-080-20	C	198.4/6	G											
	D		H											
278	A	BE	E		G Floor, Boiler Room, Flange Gasket (Beige)				57.09	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-080-21	C	198.4/6	G											
	D		H											
279	A	BE	E		G Floor, Boiler Room, Flange Gasket (Beige)				62.18	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-080-22	C	198.4/6	G											
	D		H											
280	A	WH	E		G Floor, Boiler Room, Firebrick Inside Breeching (White)	85.00	NAD							NAD
	B	1	F											
26-05-080-23	C	198.1	G											
	D	15	H											
281	A	GR	E	20	G Floor, Boiler Room, Firebrick Inside Breeching (White)	80.00	NAD							NAD
	B	1	F											
26-05-080-24	C	198.1	G											
	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
282	A	WH	E		G Floor, Boiler Room, Firebrick Inside Breeching (White)	90.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-080-25	D	10	H											
283	A	WH	E	95	G Floor, Boiler Room, Rope Gasket A/W Boiler (White)	5.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-080-26	D		H											
284	A	WH	E	95	G Floor, Boiler Room, Rope Gasket A/W Boiler (White)	5.00	NAD							NAD
	B	1	F											
	C	198.1	G											
26-05-080-27	D		H											
285	A	BK	E		G Floor, Art Room 006, Floor Tile Mastic A/W 12" x 12" Blue Floor Tile (Black)				3.03	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-080-28	D		H											
286	A	BK	E		1st Floor, Library 109, Floor Tile Mastic A/W 12" x 12" Blue Floor Tile (Black)				3.83	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-080-29	D		H											
287	A	BL	E		G Floor, Art Room 006, 12" x 12" Floor Tile (Blue)				1.57	NAD		NAD		NAD
	B	1	F							Inconclusive				
	C	198.4/6	G											
26-05-080-30	D		H											

BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl	**Project #:** TBD
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis					Sample Description	% Non-Fibrous Material	% Friable Results		% All	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
288	A	BL	E			1st Floor, Library 109, 12" x 12" Floor Tile (Blue)				1.81	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-31	D		H												
289	A	GR	E			G Floor, Music Room 009, Leveling Compound (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-32	D		H												
290	A	GR	E			G Floor, Lounge 012, Leveling Compound (Gray)	100.00	NAD							NAD
	B	1	F												
	C	198.1	G												
26-05-080-33	D		H												
291	A	BK	E			G Floor, Music Room 009, Floor Tile Mastic A/W 12" x 12" Peach Floor Tile (Black)				27.91	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-34	D		H												
292	A	BK	E			G Floor, Classroom 014, Floor Tile Mastic A/W 12" x 12" Peach Floor Tile (Black)				26.46	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-35	D		H												
293	A	PE	E			G Floor, Music Room 009, 12" x 12" Floor Tile (Peach)				4.50	NAD		NAD		NAD
	B	1	F								Inconclusive				
	C	198.4/6	G												
26-05-080-36	D		H												

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BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

Client ID # / Lab ID #	Stereomicroscope Analysis				Sample Description	% Non-Fibrous Material	% Friable Results		% AII	% PLM NOB Results		% TEM NOB Results		% TOTAL Asbestos
294	A	PE	E		G Floor, Classroom 014, 12" x 12" Floor Tile (Peach)				4.69	NAD		NAD		NAD
	B	1	F							Inconclusive				
26-05-080-37	C	198.4/6	G											
	D		H											

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BULK ASBESTOS TEST REPORT

Client/Address: WSP/250 West 34th Street 4th Floor New York NY 10119		**Project:** Siwanoy ES - 489 Siwanoy Pl **Project #:** TBD	
Laboratory ID: 26-05-080	**Date of Report:** 05/08/26	**Date of Analysis:** 05/08/26	**Date Received:** 05/07/26

PLM ANALYST
K. Esnard

PLM-NOB ANALYST
Y. Zhao

TEM-NOB ANALYST
M. Acharya

LABORATORY DIRECTOR
E. Dimitrakas or Assigned Signatory

LABORATORY ACCREDITATION NUMBERS: NVLAP Lab Code 101958-0, NYSDOH ELAP Lab ID 10955, NJDEP NY027

- Samples will be stored for sixty (60) days. LTS Inc. should be notified within this time frame for a true duplicate analysis.
- Above results relate only to samples submitted and analyzed. This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government. Test reports may not be reproduced except in full and with prior approval of LTS Inc.
- The liability of LTS Inc., with respect to the services charged, shall in no event exceed the amount of the invoice.
- Analytical Methodologies: 40 CFR, Part 763, Subpart E, Appendix E/EPA 600.R-93/116, EPA 600/M4-82-020 (Point Count only) and ELAP Methods 198.1, 198.4,198.6.
- NAD: No Asbestos Detected, SAFP: Stopped at First Positive, CH: Chrysotile, AMOS: Amosite, TRE: Tremolite, ANTH: Anthophyllite, ACT: Actinolite, and CRO: Crocidolite.
- Stereomicroscopic Analysis: A: Color, B: Layers, C: Methodology, D: Cellulose, E: Fiberglass, F: Hair, G: Vermiculite, H: OTHER
- Color: BK: Black, BR: Brown, Dk BR: Dark Brown, Lt BR: Light Brown, R BR: Reddish Brown, GR: Gray, Dk GR: Dark Gray, Lt GR: Light Gray, BE: Beige, P: Pink, R: Red, T: Tan, WH: White, Off WH: Off White, Y: Yellow, BL: Blue, CR: Cream, GN: Green, O: Orange, Multi.: Multiple Colors

Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Exterior & Basement Interior B26-05-080

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/7/2026

Inspector(s): Ivan Grujovic; Leonid Abramov

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
V2	258	Exterior, Playground E	Asphalt (black)		(-) NAD (-) NAD
↓	259	, W	↓		↓ ↓
W2	260	, Addition G	Stone mortar (gray)	(-) NAD	
↓	261	, Central wing	↓	↓	
X2	262	, Addition C	Face brick mortar (gray)	(-) NAD	
↓	263	, Central wing	↓	↓	
Y2	264	, o/s Carpentry	Old wood louver paint (gray)		(-) NAD (-) Tr. Ch
↓	265	,	↓		↓ ↓
Z2	266	GFL, Carpentry	Flange gasket a/w boiler feeder (brown)	(-) NAD	
↓	267		↓	↓	
A3	268		Flange gasket a/w pump (brown)	(-) NAD	
↓	269		↓	↓	

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
IVAN GRUJOVIC		5/7/26 21:45 AM/PM			AM/PM			AM/PM
Received by: (print)	(Sign)		Received by: (print)	(Sign)		Received by: (print)	(Sign)	
		5/7/26 21:45 AM/PM			AM/PM			AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

Analyzed by: Manbahadur Acharya 5/8/26 2030

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Exterior & Basement Interior B-26-05-030

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/7/2026

Inspector(s): Ivan Grujovic; Leonid Abramov

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ■ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
B3	270	GFL, Chimney	Interior chimney mortar (gray)	(-) NAD	
↓	271	↓	↓	↓	
C3	272	Boiler room	Breeching sealant (brown)		(-) NAD (-) NAD
↓	273	↓	↓		↓ ↓
D3	274	↓	Firestop (gray)		(-) NAD (-) NAD
↓	275	↓	↓		↓ ↓
E3	276	↓	Flange gasket (red)		(-) NAD (-) NAD
↓	277	↓	↓		↓ ↓
F3	278	↓	Flange gasket (beige)		(-) NAD (-) NAD
↓	279	↓	↓		↓ ↓
G3	280	↓	Fire brice inside breeching (white)	(-) NAD	
↓	281	↓	↓	↓	

CHAIN OF CUSTODY

Relinquished by (print)	(Sign)	Date	Time AM/PM	Received by (print)	(Sign)	Date	Time AM/PM	Relinquished by: (print)	(Sign)	Date	Time AM/PM	Received by: (print)	(Sign)	Date	Time AM/PM
IVAN GRUJOVIC		5/7/26	21:45												
		5/7/26	21:45												

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

Analyzed by: Markoni Acharya 5/8/26 2026

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Exterior & Basement Interior B26-05-080

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/7/2026

Inspector(s): Ivan Grujovic; Leonid Abramov

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐12 HR. ☐24 HR. ☐48 HR. ☒72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
G3	282	GFL, Boiler room	Firebrick inside breeching (white)	(-) NAD	
H3	283	"	Rope gasket a/w boiler (white)	(-) NAD	
"	284	"	"	"	
I3	285	" Art room 006	Floor tile mastic a/w 12"x12" blue floor tile (black)		(-) NAD (-) NAD
"	286	1st Fl, Library 109	"		" "
J3	287	GFL, Art room 006	12"x12" floor tile (blue)		(-) NAD (-) NAD
"	288	1st Fl, Library 109	"		" "
K3	289	GFL, Music room 009	Leveling compound (gray)	(-) NAD	
"	290	" Lounge 012	"	"	
L3	291	" Music room 009	Floor tile mastic a/w 12"x12" peach floor tile (black)		(-) NAD (-) NAD
"	292	" Classroom 014	"		" "
M3	293	" Music room 009	12"x12" floor tile (peach)		(-) NAD (-) NAD

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
Ivan Grujovic		5/7/26	21:45 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Jasmin Mujo		5/7/26	21:45 AM/PM			/ /	AM/PM			/ /	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

Analyzed by: Marleni Arteaga 5/8/26 20:20

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: TBD

CLIENT: SW BOCES / Pelham Union Free School District

PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803

Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: Exterior & Basement Interior

PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)

DATE(S) OF INSPECTION: 5/7/2026

Inspector(s): Ivan Grujovic; Leonid Abramov

326-05-050

WSP USA, Inc.
TELEPHONE: (212) 465-5000
ADDRESS: One Penn Plaza, 250 W 34 Street, 4th Floor, New York, NY 10119

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐ 12 HR. ☐ 24 HR. ☐ 48 HR. ☑ 72 HR.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
M3	294	GFL, Classroom 014	12"x12" floor tile (peach)		(-)NAD (-)NAD

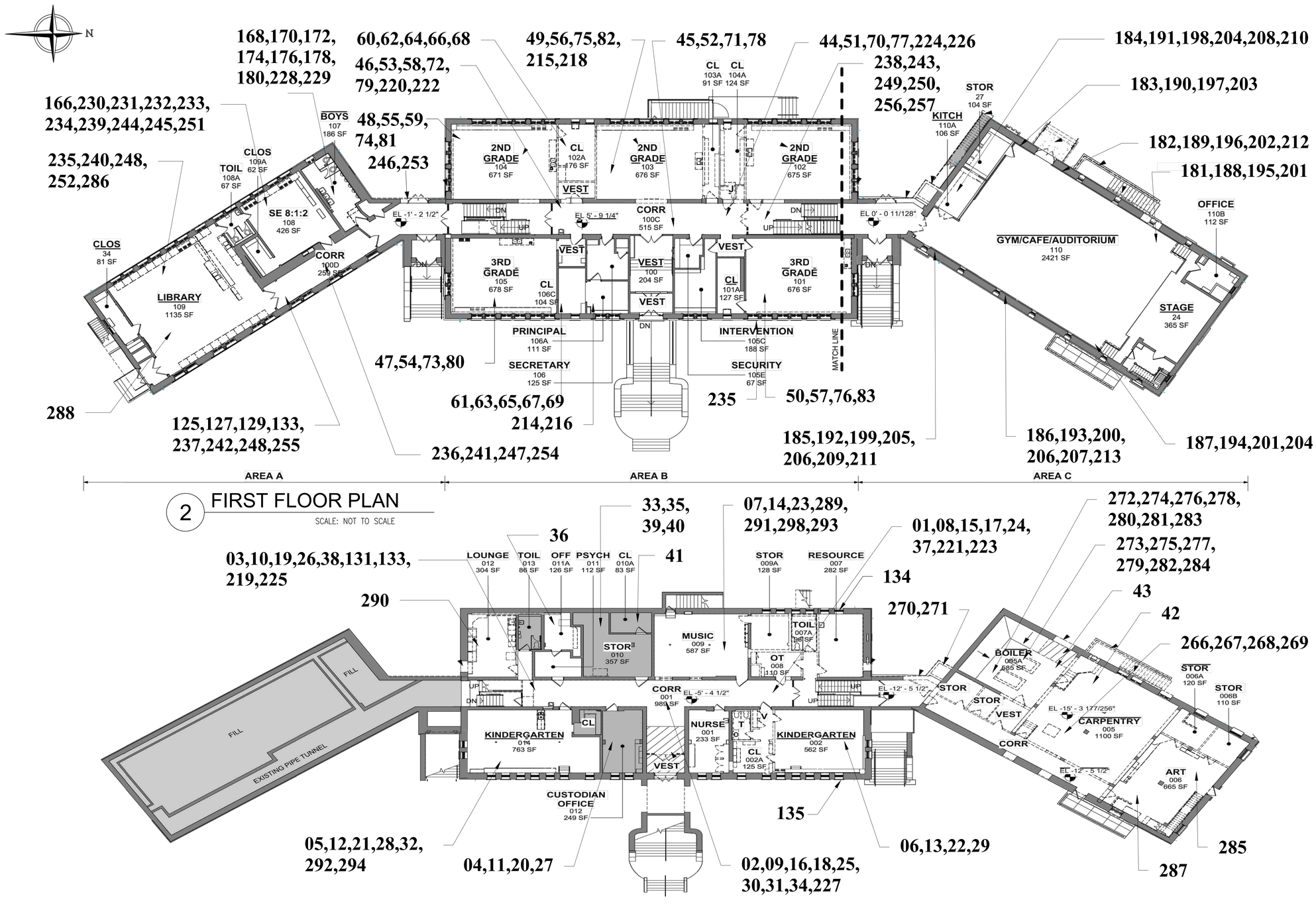
CHAIN OF CUSTODY

Relinquished by: (print) IVAN GRUJOVIC	(Sign)	5.7.26	2145 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print) Jayanie Nun	(Sign)	5.7.26	21:45 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ /	AM/PM

NOTE: USE STOP AT FIRST POSITIVE METHODOLOGY FOR EVERY HOMOGENEOUS MATERIAL

Analyzed by: Morteoni Aharaya 5/8/26

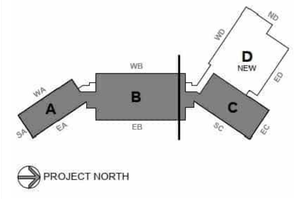
APPENDIX C:
ASBESTOS BULK SAMPLE LOCATION DRAWINGS



PELHAM PUBLIC SCHOOLS

629 FIFTH AVENUE
PELHAM, NY 10803

KEY PLAN



ENVIRONMENTAL CONSULTANT

WSP USA, INC.
ONE PENN PLAZA, 4TH FLOOR
NEW YORK, NY 1019
TEL. 212.465.5000

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

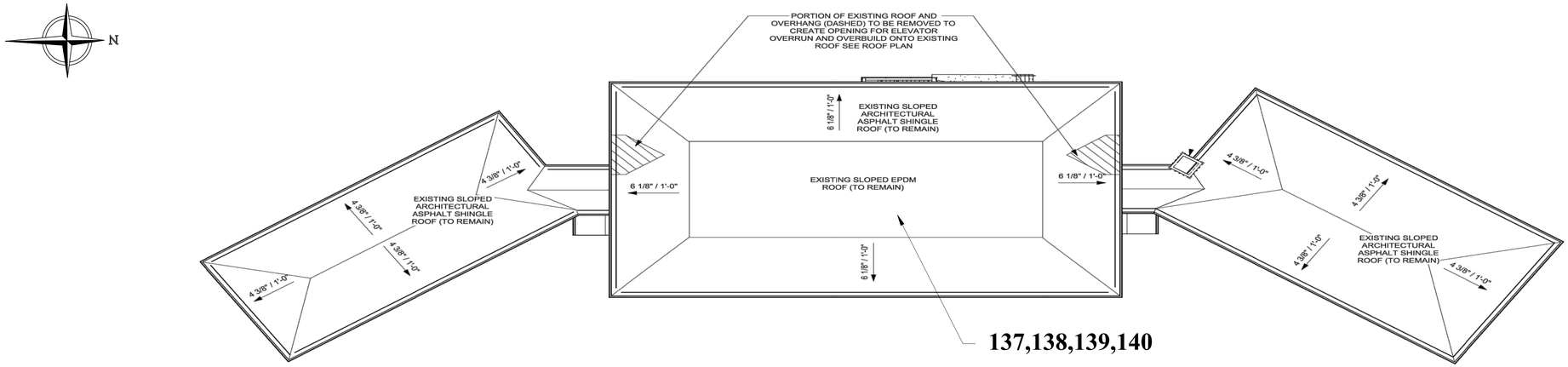
SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
489 SIWANOY PLACE
PELHAM, NY 10803

DRAWING TITLE:
BULK SAMPLE LOCATIONS GROUND AND FIRST FLOOR PLANS

DRAWN BY: J. PEREZ
INSP.: I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB
INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB
CHECKED BY: A. SMOLYAR

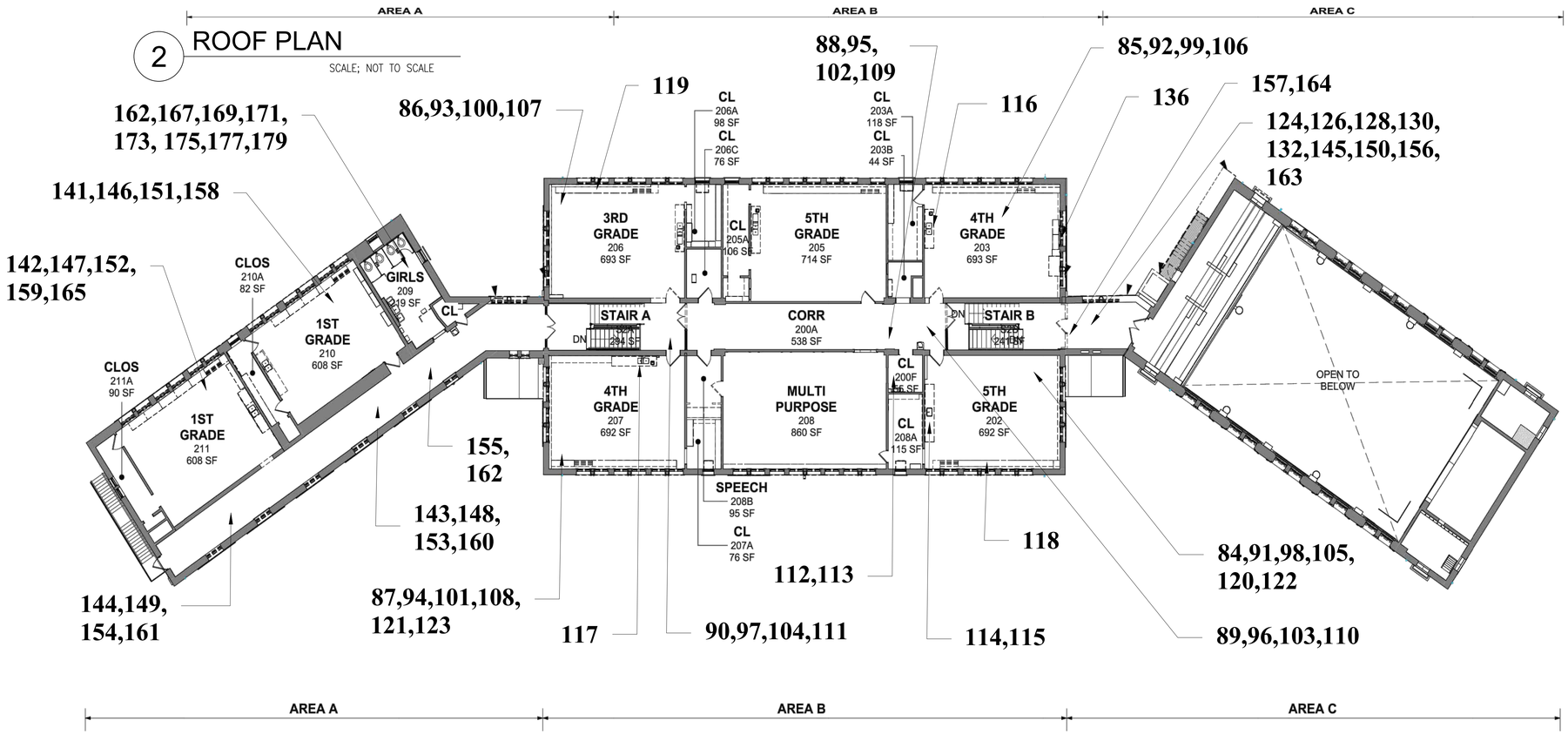
SCALE: NOT TO SCALE
DATE: MAY 22, 2026
DRAWING NUMBER: **BSL001**
DRAWING NUMBER: 1 OF 3

CONSULTANTS PROJECT NO. US0048608.1475



2 ROOF PLAN

SCALE; NOT TO SCALE



1 SECOND FLOOR PLAN

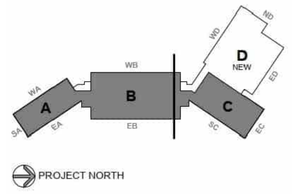
SCALE: NOT TO SCALE

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KEY PLAN



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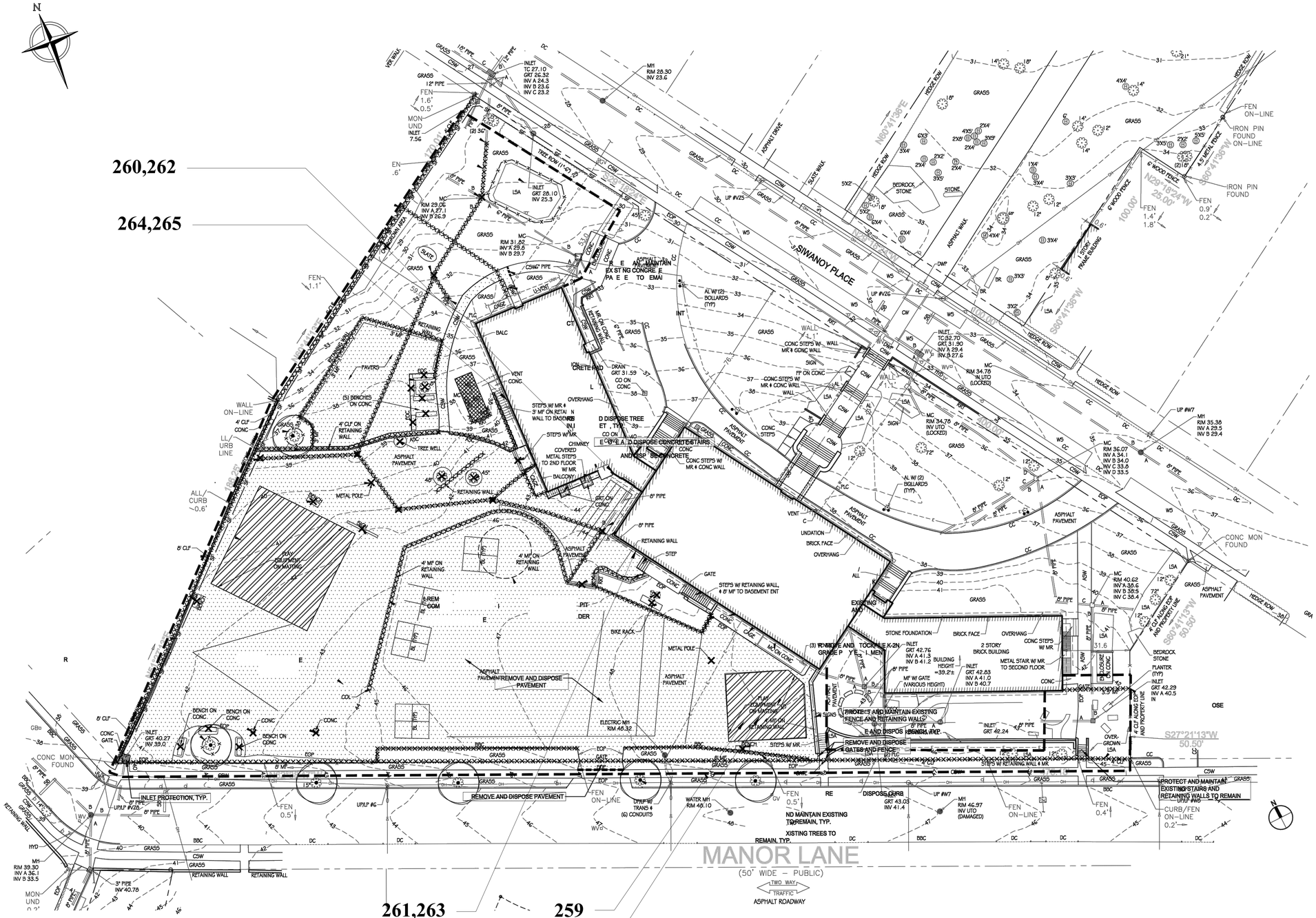
SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
489 SIWANOY PLACE
PELHAM, NY 10803

DRAWING TITLE:

BULK SAMPLE LOCATIONS SECOND FLOOR AND ROOF PLANS

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP.: I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB	DATE: MAY 22, 2026
INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**BSL002**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 2 OF 3

CONSULTANTS PROJECT NO. US0048608.1475

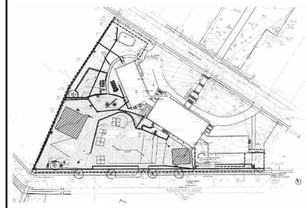


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1		
2		
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PELHAM, NY 10803

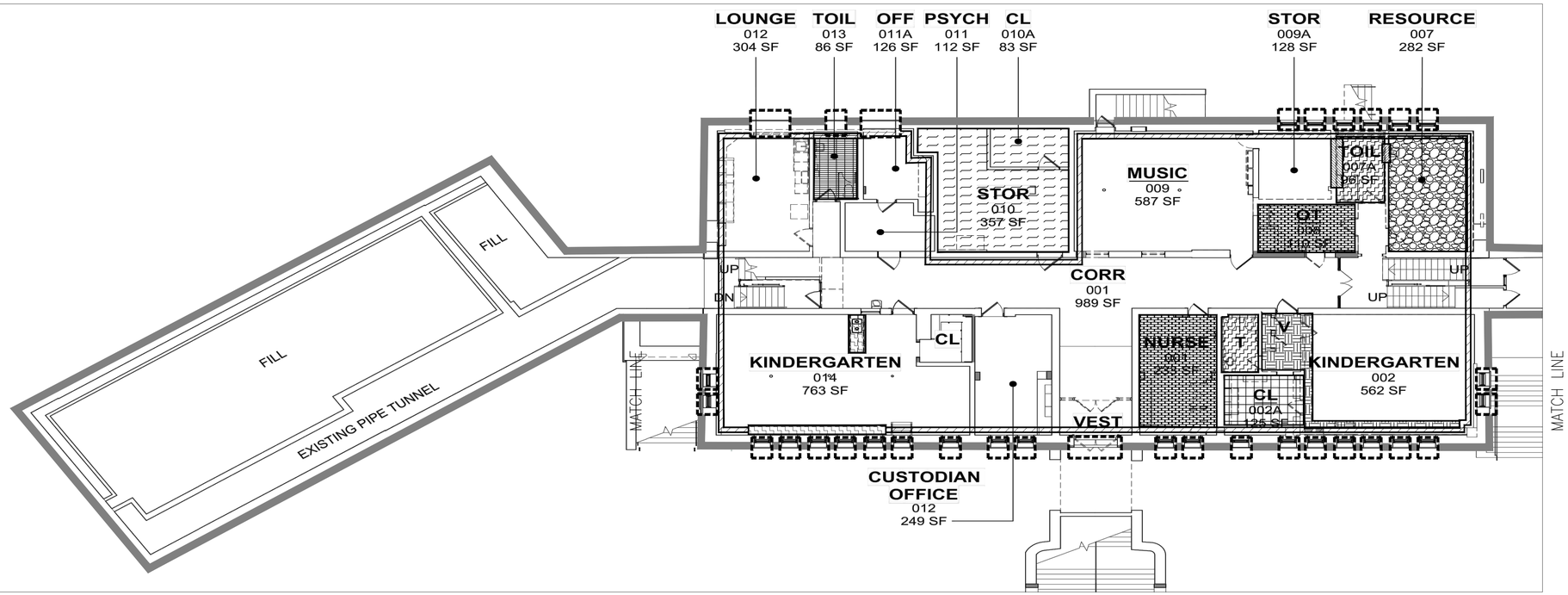
DRAWING TITLE:

BULK SAMPLE LOCATIONS SITE PLAN

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP. : I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB	DATE: MAY 22, 2026
INSP. : M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP. : L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**BSL003**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 3 OF 3

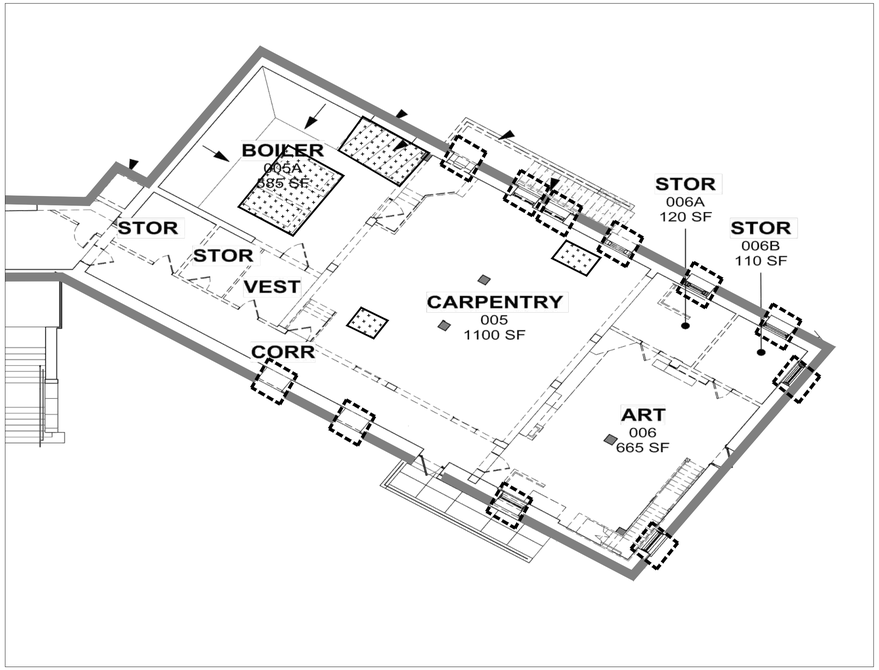
CONSULTANTS PROJECT NO. US0048608.1475

APPENDIX D:
ASBESTOS CONTAINING MATERIAL LOCATION DRAWINGS



1 GROUND FLOOR PLAN - AREAS A & B

SCALE: NOT TO SCALE



2 GROUND FLOOR PLAN - AREA C

SCALE: NOT TO SCALE

LEGEND

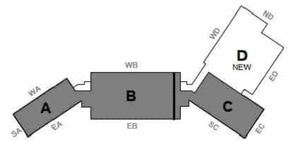
- ASBESTOS-CONTAINING EXTERIOR DOOR/WINDOW/LOUVER FRAME CAULKING, WHITE/GRAY & ASSUMED ASBESTOS-CONTAINING CONCEALED DOOR/WINDOW/LOUVER FRAME CAULKING/TAR; CONCEALED DOOR/ WINDOW/LOUVER LINTEL/FLASHING/FABRIC RUST INHIBITOR
- ASSUMED ASBESTOS-CONTAINING CONCEALED FOUNDATION DAMP PROOFING; CONCEALED WATERPROOFING BARRIER BEHIND FACE BRICK
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS; WALL PLASTER, BROWN & WHITE COATS & CONTAMINATED ACM CERAMIC TILE; CERAMIC TILE BACKING, GRAY; CERAMIC WALL TILE GROUT, WHITE
- ASBESTOS-CONTAINING CEILING CEMENT COATING, BROWN
- ASBESTOS-CONTAINING BOTTOM LAYER 9" X 9" FLOOR TILE, GREEN & ASSOCIATED MASTIC, BLACK; CONTAMINATED ACM TOP LAYER 12" X 12" FLOOR TILE, BLUE & ASSOCIATED MASTIC, BLACK
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS, WALL PLASTER, BROWN & WHITE COATS; CONTAMINATED ACM CERAMIC TILE; CERAMIC WALL TILE BACKING, GRAY; CERAMIC WALL TILE GROUT, WHITE & ASSUMED ASBESTOS-CONTAINING WATERPROOFING UNDER BATHROOM FLOOR
- ASSUMED ASBESTOS-CONTAINING CONCEALED PIPE INSULATION & ASSOCIATED, FITTINGS IN WALL CHASE
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS; WALL PLASTER, BROWN & WHITE COATS; CONTAMINATED ACM GLUE DOTS, BROWN; ASBESTOS-CONTANING BOTTOM LAYER 9" X 9" FLOOR TILE, GREEN;& ASSOCIATED MASTIC, BLACK; CONTAMINATED ACM LAMINATE FLOORING, BROWN
- ASBESTOS-CONTAINING 9" X 9" FLOOR TILE, GREEN & ASSOCIATED MASTIC
- ASSUMED ASBESTOS-CONTAINING CONCEALED FELT PAPER BELOW WOOD FLOOR
- ASSUMED ASBESTOS-CONTAINING CONCEALED VAPOR DIFFUSION RETARDER UNDER SLAB/SOFT CONCRETE FILLER
- ASBESTOS-CONTAINING BOTTOM LAYER 9" X 9" FLOOR TILE, GREEN & ASSOCIATED MASTIC, BLACK; CONTAMINATED ACM TOP LAYER 12" X 12" FLOOR TILE, BEIGE MARBLED & ASSOCIATED GLUE
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS, WALL PLASTER, BROWN & WHITE COATS

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REVISIONS:

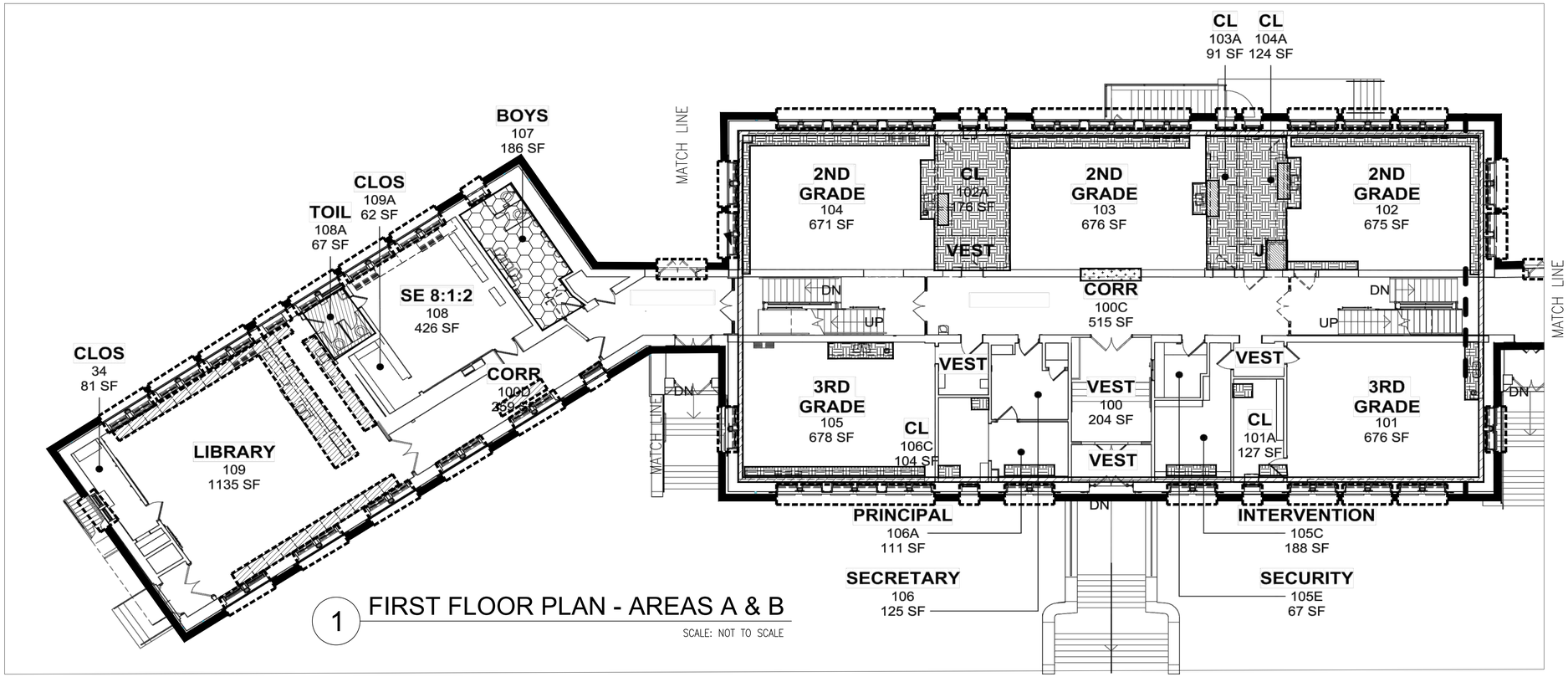
NUMBER	DESCRIPTION	DATE
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SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
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DRAWING TITLE:
ASBESTOS CONTAINING MATERIALS GROUND FLOOR PLAN

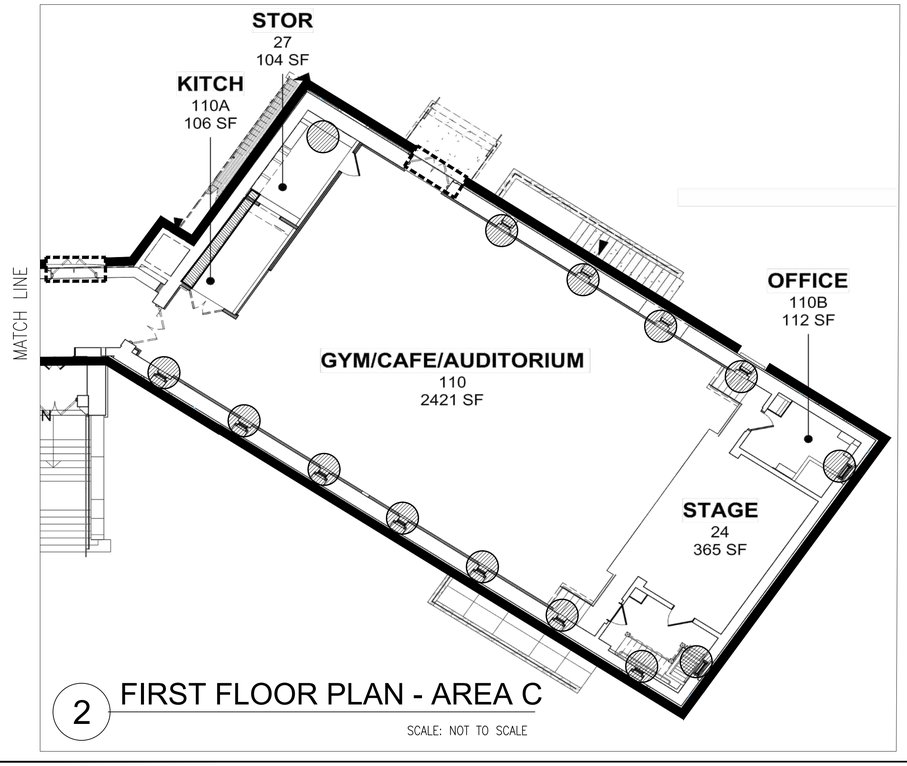
DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP.: I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB	DATE: MAY 28, 2026
INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**ACM001**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 1 OF 5

CONSULTANTS PROJECT NO. US0048608.1475



1 FIRST FLOOR PLAN - AREAS A & B

SCALE: NOT TO SCALE



2 FIRST FLOOR PLAN - AREA C

SCALE: NOT TO SCALE

LEGEND

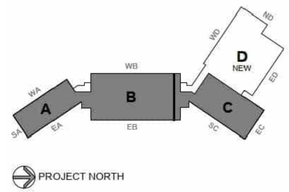
- ASBESTOS-CONTAINING EXTERIOR DOOR/WINDOW/LOUVER FRAME CAULKING, WHITE/GRAY & ASSUMED ASBESTOS-CONTAINING CONCEALED DOOR/WINDOW/LOUVER FRAME CAULKING/TAR; CONCEALED DOOR/ WINDOW/LOUVER/ LINTEL/FLASHING/FABRIC RUST INHIBITOR
- ASSUMED ASBESTOS-CONTAINING CONCEALED WATERPROOFING BARRIER BEHIND FACE BRICK
- ASSUMED ASBESTOS-CONTAINING CONCEALED PIPE INSULATION & ASSOCIATED, FITTINGS IN WALL CHASE
- ASSUMED ASBESTOS-CONTAINING CONCEALED FELT PAPER BELOW WOOD FLOOR
- ASBESTOS-CONTAINING BOTTOM LAYER 9" X 9" FLOOR TILE, YELLOW & ASSOCIATED MASTIC, BLACK; CONTAMINATED ACM TOP LAYER 12" X 12" FLOOR TILE, WHITE MARBLED AND BLUE & ASSOCIATED GLUE, GRAY
- ASBESTOS-CONTAINING BOTTOM LAYER 9" X 9" FLOOR TILE, YELLOW & ASSOCIATED MASTIC; CONTAMINTED ACM TOP LAYER 12" X 12" FLOOR TILE, RED & ASSOCIATED GLUE, YELLOW; ASSUMED ASBESTOS-CONTAINING CONCEALED WATERPROOFING UNDER BATHROOM FLOOR
- VERMICULITE-CONTAINING WALL TILE BACKING, GRAY; CONTAMINATED CERAMIC WALL TILE; CERAMIC WALL TILE GROUT, GRAY; ASSUMED ASBESTOS-CONTAINING CONCEALED PIPE INSULATION & ASSOCIATED FITTINGS IN WALL CHASE; CONCEALED WATERPROOFING UNDER BATHROOM FLOOR
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS, WALL PLASTER, BROWN & WHITE COATS
- ASBESTOS-CONTAINING CONCEALED CORRUGATED RADIATOR INSULATION, WHITE/GRAY

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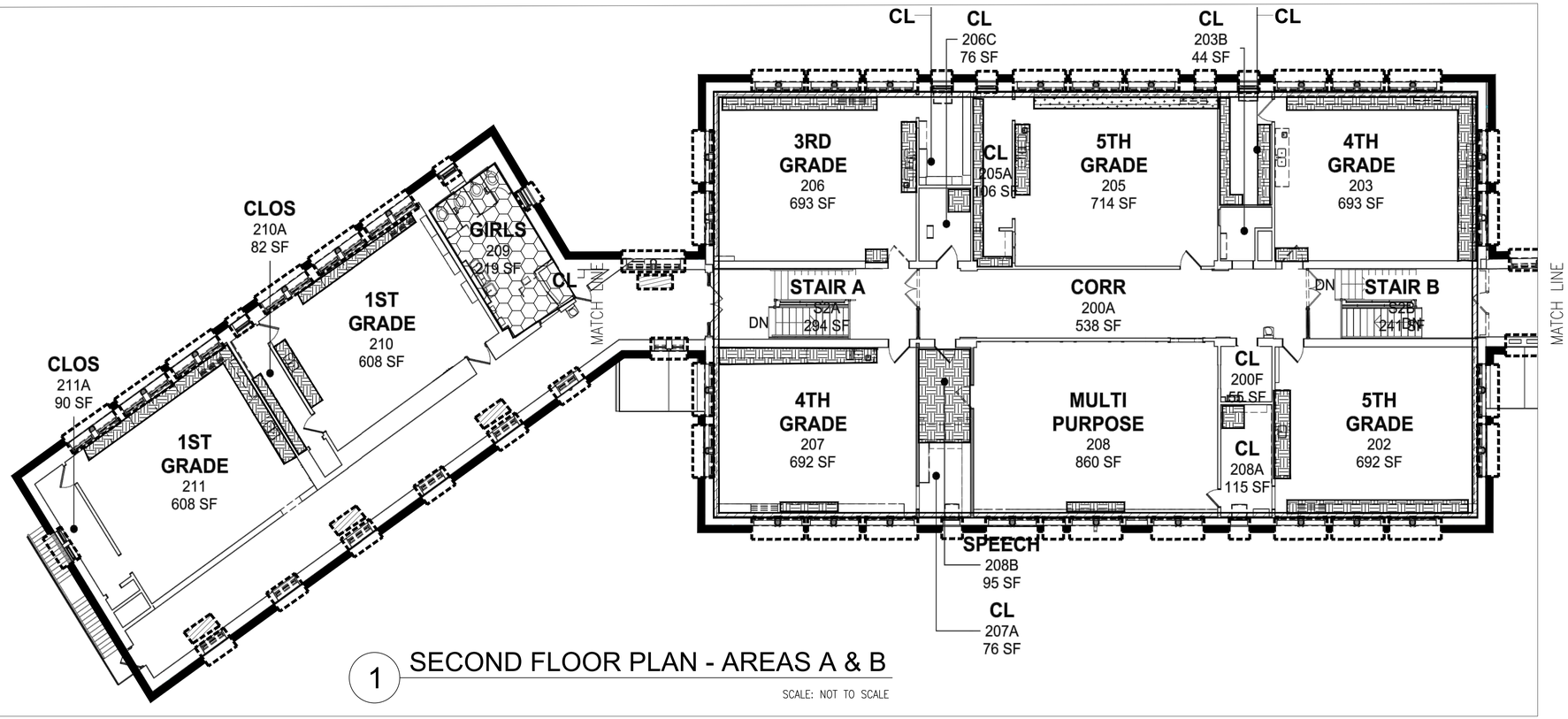
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SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
489 SIWANOY PLACE
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DRAWING TITLE:
ASBESTOS CONTAINING MATERIALS FIRST FLOOR PLAN

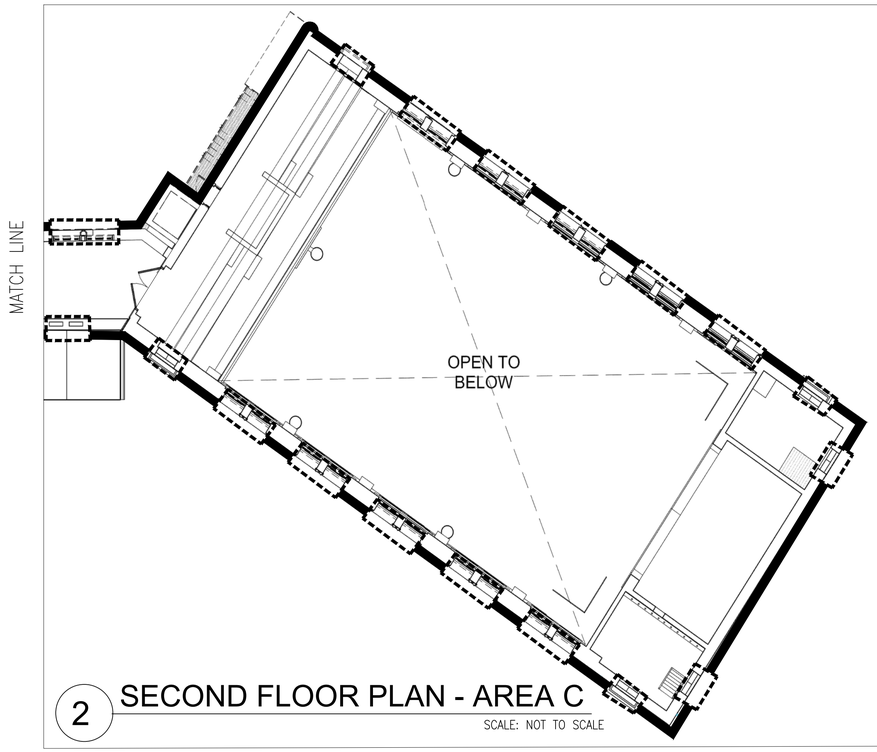
DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP. : I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB	DATE: MAY 28, 2026
INSP. : M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP. : L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**ACM002**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 2 OF 5

CONSULTANTS PROJECT NO. US0048608.1475



1 SECOND FLOOR PLAN - AREAS A & B

SCALE: NOT TO SCALE



2 SECOND FLOOR PLAN - AREA C

SCALE: NOT TO SCALE

LEGEND

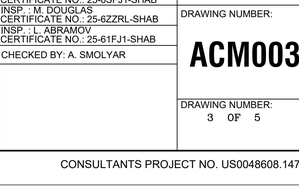
- ASBESTOS-CONTAINING EXTERIOR DOOR/WINDOW/LOUVER FRAME CAULKING, WHITE/GRAY & ASSUMED ASBESTOS-CONTAINING CONCEALED DOOR/WINDOW/LOUVER FRAME CAULKING/TAR; CONCEALED DOOR/ WINDOW/LOUVER LINTEL/FLASHING/FABRIC RUST INHIBITOR
- ASUMED ASBESTOS-CONTAINING CONCEALED WATERPROOFING BARRIER BEHIND FACE BRICK
- ASSUMED ASBESTOS-CONTAINING CONCEALED FELT PAPER BELOW WOOD FLOOR
- ASBESTOS-CONTAINING BOTTOM LAYER 9" X 9" FLOOR TILE, YELLOW & ASSOCIATED MASTIC, BLACK; CONTAMINATED ACM TOP LAYER 12" X 12" FLOOR TILE, WHITE MARBELED AND BLUE & ASSOCIATED MASTIC, BLACK
- VERMICULITE-CONTAINING WALL TILE BACKING, GRAY; CONTAMINATED CERAMIC WALL TILE; CERAMIC WALL TILE GROUT, GRAY; ASSUMED ASBESTOS-CONTAINING CONCEALED PIPE INSULATION & ASSOCIATED FITTINGS IN WALL CHASE; CONCEALED WATERPROOFING UNDER BATHROOM FLOOR
- ASBESTOS-CONTAINING CEILING PLASTER, BROWN & WHITE COATS, WALL PLASTER, BROWN & WHITE COATS

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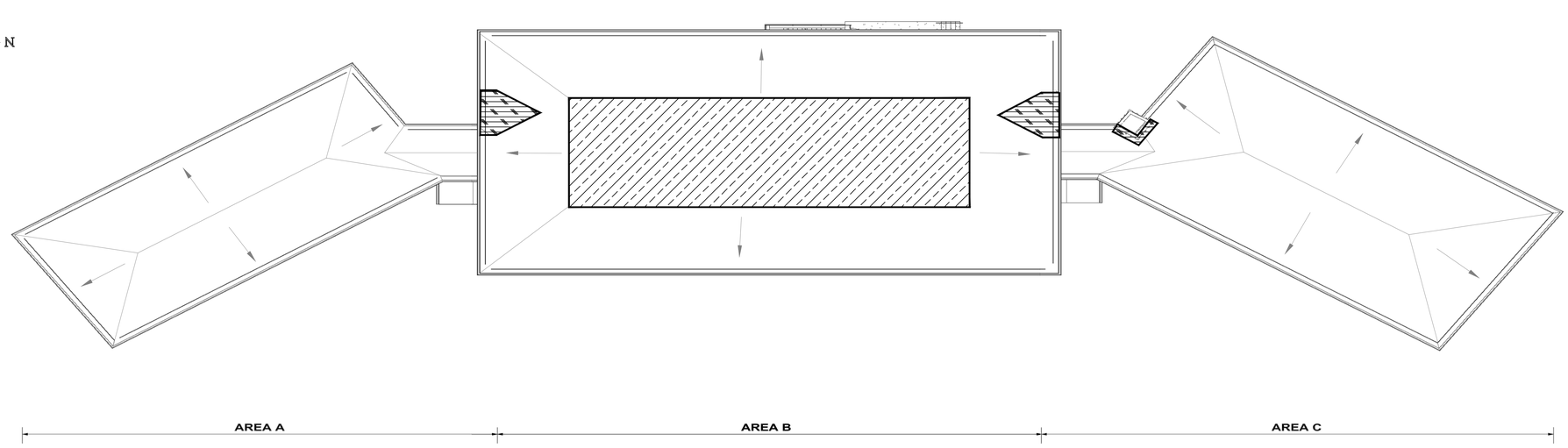
NUMBER	DESCRIPTION	DATE
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SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
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DRAWING TITLE:
ASBESTOS CONTAINING MATERIALS SECOND FLOOR PLAN

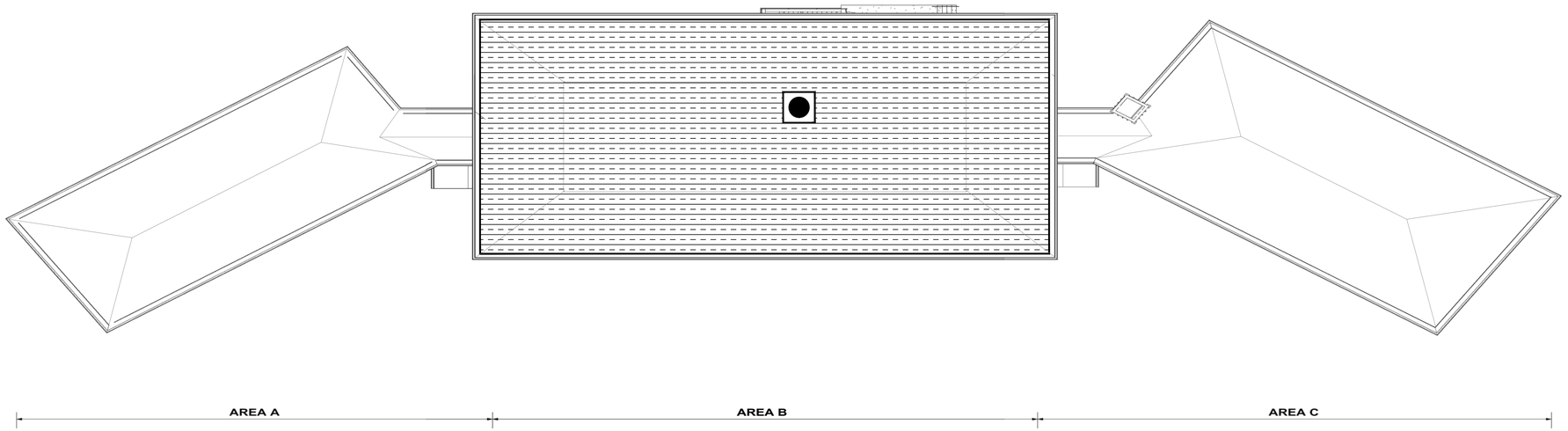
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INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**ACM003**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 3 OF 5

CONSULTANTS PROJECT NO. US0048608.1475



2 ROOF PLAN

SCALE: NOT TO SCALE



1 ATTIC FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

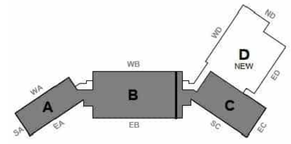
- ASBESTOS-CONTAINING EXPOSED CEILING PLASTER, BROWN COAT (FROM FLOOR BELOW)
- ASSUMED ASBESTOS-CONTAINING ROOFIN SYSTEM MATERIALS; FLASHING/TAR ASSOCIATED WITH FOOFING SYSTEM
- ASSUMED ASBESTOS-CONTAINING ASPHALT SHINGLE; CONCEALED FELT PAPER UNDER ASPHALT SHINGLE; FLASHING/TAR; DRIP EDGE FLASHING/TAR
- ASBESTOS-CONTAINING DEBRIS BETWEEN JOISTS, GRAY

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DRAWING TITLE:
ASBESTOS CONTAINING MATERIALS ATTIC AND ROOF PLANS

DRAWN BY: J. PEREZ
INSP.: I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB
INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB
CHECKED BY: A. SMOLYAR

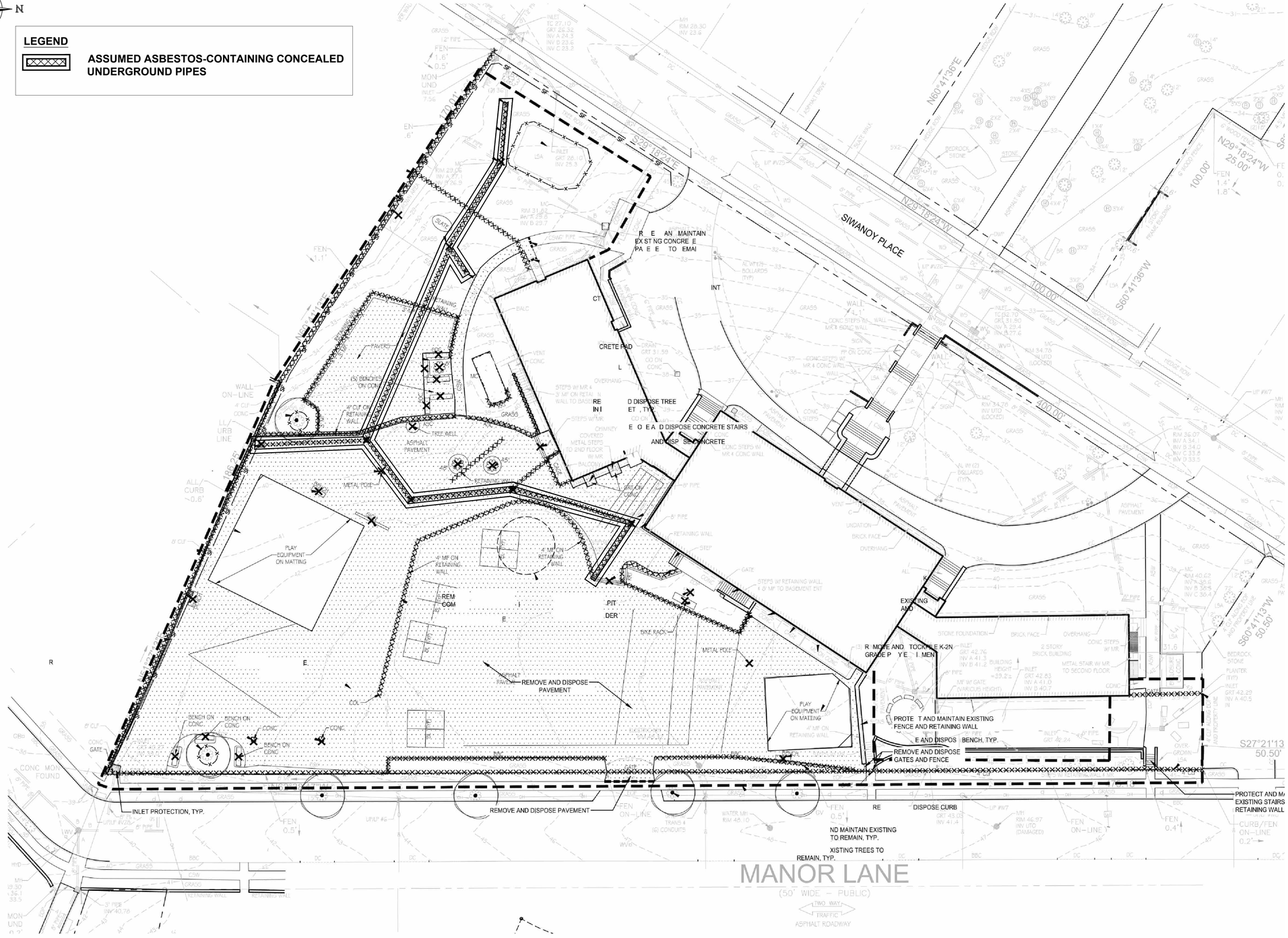
SCALE: NOT TO SCALE
DATE: MAY 28, 2026
DRAWING NUMBER:
ACM004
DRAWING NUMBER: 4 OF 5

CONSULTANTS PROJECT NO. US0048608.1475

N

LEGEND

ASSUMED ASBESTOS-CONTAINING CONCEALED UNDERGROUND PIPES



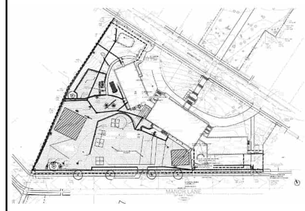
1 SITE PLAN

SCALE: NOT TO SCALE

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SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS
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DRAWING TITLE:
ASBESTOS CONTAINING MATERIALS SITE PLAN

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP.: I. GRUJOVIC CERTIFICATE NO.: 25-6SFJ1-SHAB	DATE: MAY 28, 2026
INSP.: M. DOUGLAS CERTIFICATE NO.: 25-6ZZRL-SHAB	DRAWING NUMBER:
INSP.: L. ABRAMOV CERTIFICATE NO.: 25-61FJ1-SHAB	**ACM005**
CHECKED BY: A. SMOLYAR	DRAWING NUMBER: 5 OF 5

CONSULTANTS PROJECT NO. US0048608.1475

APPENDIX E:
LEAD XRF SHOT RESULTS

XRF CALIBRATION CHECK FORM

PAGE 1 OF 1

PROJ. NO.:	US0048608	DATE:	05/05/26
PROJECT NAME:	Siwanoy ES Additions and Alterations	INSPECTOR NAME:	M. Douglas
CLIENT:	SWBOCES/ Pelham Union Free School District	INSPECTOR SIGNATURE:	
SITE:	Siwanoy Elementary School	PROJ. MANAGER:	L. Abramov

WSP USA
TELEPHONE # (212) 612-7900
ADDRESS: Penn 1, 4th Floor, New York, NY

XRF MAKE/MODEL: RMD LPA-1 (Serial#3675)
Heuresis Pb200e (Serial#2150)

NOTES:

CALIBRATION CHECK – FIELD START

1.04 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1502	TEST #	1	2	3	0.90
	XRF READING	1.0	0.9	0.8	

CALIBRATION CHECK – FIELD START

<0.001 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1505	TEST #	4	5	6	0.0
	XRF READING	0.0	0.0	0.0	

CALIBRATION CHECK – FIELD END/4-HR (circle one)

1.04 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1900	TEST #	164	165	166	0.86
	XRF READING	09	0.9	08	

CALIBRATION CHECK – FIELD END/4-HR (circle one)

<0.001 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1902	TEST #	167	168	169	0.0
	XRF READING	0.0	0.0	0.0	

CALIBRATION CHECK – FIELD END/4-HR (circle one)

_____ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: _____	TEST #				
	XRF READING				

CALIBRATION CHECK – FIELD END/4-HR (circle one)

_____ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: _____	TEST #				
	XRF READING				

CALIBRATION CHECK – FIELD END/4-HR (circle one)

_____ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: _____	TEST #				
	XRF READING				

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl. Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS: Center
FLOOR # 2nd ROOM # 208 ROOM NAME:

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I/F/P]	COMPONENT	WALL/SIDE DESIGN	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
7	M PL S C CB PG CR; B W V CT G FG; OTHER	Beige (Bge)	I	Door Frame (DF)	A B C D; RM CTR; FL CL						Wing B Closet	0.7
8	M PL S C CB PG CR; B W V CT G FG; OTHER	↓	↓	Door (DR)	A B C D; RM CTR; FL CL							0.4
9	M PL S C CB PG CR; B W V CT G FG; OTHER	White (W)		Wall (W)	A B C D; RM CTR; FL CL							0.2
10	M PL S C CB PG CR; B W V CT G FG; OTHER	↓		Electrical Conduit (EC)	A B C D; RM CTR; FL CL							0.3
11	M PL S C CB PG CR; B W V CT G FG; OTHER	Bge		Cove Base (CB)	A B C D; RM CTR; FL CL							0.1
12	M PL S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C D; RM CTR; FL CL							0.2
13	M PL S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C D; RM CTR; FL CL							0.0
14	M PL S C CB PG CR; B W V CT G FG; OTHER	W		Cabinet (Cab)	A B C D; RM CTR; FL CL							0.0
15	M PL S C CB PG CR; B W V CT G FG; OTHER	Blue (Bl)		W	A B C D; RM CTR; FL CL							0.1
16	M PL S C CB PG CR; B W V CT G FG; OTHER	Varnish (V)		Floor	A B C D; RM CTR; FL CL							0.1
17	M PL S C CB PG CR; B W V CT G FG; OTHER	Gray		Ceiling Rail (CR)	A B C D; RM CTR; FL CL							0.1
—	M PL S C CB PG CR; B W V CT G FG; OTHER				A B C D; RM CTR; FL CL						—	
18	M PL S C CB PG CR; B W V CT G FG; OTHER	Bge		DF	A B C D; RM CTR; FL CL						2ND FL A Wing	0.6
19	M PL S C CB PG CR; B W V CT G FG; OTHER	↓		DR	A B C D; RM CTR; FL CL						Girls	0.2
20	M PL S C CB PG CR; B W V CT G FG; OTHER	W		Upper Wall (UW)	A B C D; RM CTR; FL CL							0.0
21	M PL S C CB PG CR; B W V CT G FG; OTHER	Pink (P)		Lower Wall (LW)	A B C D; RM CTR; FL CL							0.2
22	M PL S C CB PG CR; B W V CT G FG; OTHER	W		UW	A B C D; RM CTR; FL CL							0.2
23	M PL S C CB PG CR; B W V CT G FG; OTHER	P		LW	A B C D; RM CTR; FL CL							0.1
24	M PL S C CB PG CR; B W V CT G FG; OTHER	W		UW	A B C D; RM CTR; FL CL							0.2
25	M PL S C CB PG CR; B W V CT G FG; OTHER	P	↓	LW	A B C D; RM CTR; FL CL							0.0

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl. Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION (I / F / P)	COMPONENT	WALL/SIDE DESIGN	SIDE (L/C/R)	HEIGHT (L/M/U)	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) (SF)	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING (mg/cm²)
26	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	I	LW	A B C (D); RM CTR; FL CL							0.1
27	M PL S C CB PG CR; B W V (C) G FG; OTHER	P	↓	LW	A B C (D); RM CTR; FL CL							-0.1
28	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blue	↓	Window Sill (WS)	A B C (D); RM CTR; FL CL							0.6
29	(M) PL S C CB PG CR; B W V CT G FG; OTHER	↓	↓	Window Frame (WF)	A B C (D); RM CTR; FL CL							0.5
—	M PL S C CB PG CR; B W V CT G FG; OTHER				A B C D; RM CTR; FL CL						—	
30	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Yellow (Y)	F	DF	(A) B C D; RM CTR; FL CL						[redacted] Closet	0.8
31	M (PL) S C CB PG CR; B [redacted] V CT G FG; OTHER	W	↓	W	(A) B C D; RM CTR; FL CL						211A	8.4
32	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Y	↓	DF	[redacted] (B) C D; RM CTR; FL CL							1.1
33	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	↓	W	A (B) C D; RM CTR; FL CL							7.2
34	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Y	↓	CB	A (B) C D; RM CTR; FL CL							0.6
35	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Y	↓	CB	A B (C) D; RM CTR; FL CL							0.8
36	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	T	W	A B (C) D; RM CTR; FL CL							7.3
37	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Y	↓	WF	A B (C) D; RM CTR; FL CL							1.2
38	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓	↓	WS	A B (C) D; RM CTR; FL CL							1.1
39	(M) PL S C CB PG CR; B W V CT G FG; OTHER	W	↓	Duct Work (DW)	A B (C) D; RM CTR; FL CL							0.1
40	M (PL) S C CB PG CR; B W V CT G FG; OTHER	↓	↓	W	A B C (D); RM CTR; FL CL							7.9
41	M PL S C CB PG CR; B (W) V CT G FG; OTHER	V	↓	Floor	A B C D; RM CTR; (FL) CL							0.1
42	(M) PL S C CB PG CR; B W V CT G FG; OTHER	Gray (G)	↓	Ceiling Rail (CR)	A B C D; RM CTR; FL (CL)							0.0
—	M PL S C CB PG CR; B W V CT G FG; OTHER				A B C D; RM CTR; FL CL							
↓	M PL S C CB PG CR; B W V CT G FG; OTHER				A B C D; RM CTR; FL CL							

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS:
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
43	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blue	I	DF	(A) B C D; RM CTR; FL CL						Rm 208 Wing B	0.6
44	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.3
45	M (PL) S C CB PG CR; B W V CT G FG; OTHER	Blue (B)		W	(A) B C D; RM CTR; FL CL							2.9
46	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blue		CB	(A) B C D; RM CTR; FL CL							0.4
47	(M) PL S C CB PG CR; B W V CT G FG; OTHER	W		WF	A (B) C D; RM CTR; FL CL							0.2
48	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blue		WS	A (B) C D; RM CTR; FL CL							0.3
49	M (PL) S C CB PG CR; B [illegible] V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							4.7
50	M (PL) S C CB PG CR; B W V CT G FG; OTHER	↓		↓	A B (C) D; RM CTR; FL CL							4.9
51	(M) PL S C CB PG CR; B W V CT G FG; OTHER	Blue		Radiator Cover (RC)	A B (C) D; RM CTR; FL CL							0.3
52	M PL S C CB PG CR; B (W) V CT G FG; OTHER	V		Floor	A B C D; RM CTR; (FL) CL							-0.1
53	M PL S C CB PG CR; B W V CT G FG; OTHER	Galvanized		CR	A B C D; RM CTR; FL (CL)							0.1
54	(M) PL S C CB PG CR; B [illegible] V CT G FG; OTHER	Blue		DF	(A) B C D; RM CTR; FL CL						Hallway Wing B	0.2
55	(M) PL S C CB PG CR; B [illegible] V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.0
56	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		Wall	A (B) C D; RM CTR; FL CL							6.8
57	M (PL) S C CB PG CR; B W V CT G FG; OTHER	Blue		Cove Base	A (B) C D; RM CTR; FL CL							0.6
58	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							7.2
59	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							6.9
60	M PL S C CB PG CR; B [illegible] V CT G FG; OTHER	Blue		DF	(A) B C D; RM CTR; FL CL						211	0.5
61	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.4
62	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	↓	W	(A) B C D; RM CTR; FL CL							7.1

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass. Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative.

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
63	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Beige	I	Wall Rail/ Cabinet	(A) B C D; RM CTR; FL CL						Rm211	0.2
64	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A (B) C D; RM CTR; FL CL							6.8
65	M (PL) S C CB PG CR; B V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							7.0
66	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Bic		WF	A B (C) D; RM CTR; FL CL							0.3
67	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		FWS	A B (C) D; RM CTR; FL CL							0.2
68	(M) PL S C CB PG CR; B W V CT G FG; OTHER	↓		RG	A B (C) D; RM CTR; FL CL							0.2
69	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							7.3
70	M PL S C CB PG CR; B (W) V CT G FG; OTHER	V		Floor	A B C D; RM CTR; (FL) CL							0.2
71	(M) PL S C CB PG CR; B W V CT G FG; OTHER	Gal		CR	A B C D; RM CTR; FL CL							0.1
72	(M) PL S C CB PG CR; B W V CT G FG; OTHER	Bic		DF	(A) B C D; RM CTR; FL CL						Bldg Hall	0.5
73	(M) PL S C CB PG CR; B W V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.2
74	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							-0.6
75	M (PL) S C CB PG CR; B W V CT G FG; OTHER	V		W	A (B) C D; RM CTR; FL CL							12.3
76	M (PL) S C CB PG CR; B W V CT G FG; OTHER	Bl		CB	A (B) C D; RM CTR; FL CL							0.5
77	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							-0.5
78	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							13.9
79	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Bic		DF	(A) B C D; RM CTR; FL CL						Bldg 104	0.8
80	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							1.1
81	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		CB	(A) B C D; RM CTR; FL CL							0.6
82	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							0.4

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative.

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 09/09/2026

SPACE CHARACTERISTICS
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENTREPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
83	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	I	W	A (B) C D; RM CTR; FL CL						104	0.2
84	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Bie		WF	A (B) C D; RM CTR; FL CL							0.7
85	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		WS	A (B) C D; RM CTR; FL CL							0.8
86	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							0.3
87	(M) S C CB PG CR; B W V CT G FG; OTHER	W		RC	A B (C) D; RM CTR; FL CL							0.8
88	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							0.9
89	(M) PL S C CB PG CR; B V CT G FG; OTHER	Bne		DF	(A) B C D; RM CTR; FL CL						AVG Hallway 104	0.0
90	(M) PL S C CB PG CR; B W V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.2
91	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							0.1
92	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A (B) C D; RM CTR; FL CL							6.8
93	M (PL) S C CB PG CR; B W V CT G FG; OTHER	BL		CB	A (B) C D; RM CTR; FL CL							1.3
94	M S C CB PG CR; B (W) V CT G FG; OTHER	Bie		RC	A (B) C D; RM CTR; FL CL							0.0
95	M (PL) S C CB PG CR; B V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							6.3
96	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							9.0
97	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Bie		DF	(A) B C D; RM CTR; FL CL						108	0.3
98	M PL S C CB PG CR; B V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.4
99	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		WR/ Cab	(A) B C D; RM CTR; FL CL							0.5
100	M PL S C CB PG CR; B (W) V CT G FG; OTHER	V		Acoustical Tile	(A) B C D; RM CTR; FL CL							0.2
101	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							8.7
102	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	↓	W	A (B) C D; RM CTR; FL CL							8.6

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
103	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	I	W	A B (C) (D); RM CTR; FL CL						108	7.1
104	M (PL) S C CB PG CR; B W V CT G FG; OTHER	↓	↓	↓	A B C (D); RM CTR; FL CL						108 Restroom	9.0
105	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blc		DF	(A) B C D; RM CTR; FL CL						↓ A Wing	0.7
106	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL							0.3
107	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							4.3
108	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A (B) C D; RM CTR; FL CL							5.1
109	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blc		Shelf	A (B) C D; RM CTR; FL CL							1.8
110	M PL S C CB PG CR; B (W) V CT G FG; OTHER	W		WF	A (B) C D; RM CTR; FL CL							3.8
111	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B (C) D; RM CTR; FL CL							4.2
112	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	A B C (D); RM CTR; FL CL							5.1
113	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blc		WF	A B C (D); RM CTR; FL CL							0.8
114	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		WS	A B C (D); RM CTR; FL CL							0.7
115	(M) PL S C CB PG CR; B W V CT G FG; OTHER	W		RC	A B C (D); RM CTR; FL CL							0.0
116	(M) PL S C CB PG CR; B W V CT G FG; OTHER	↓		DW	A B C (D); (RM) CTR; FL (CL)							0.1
117	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blc		Toilet Stalls	A B C D; (RM) CTR; FL CL							0.6
118	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DF	(A) B C D; RM CTR; FL CL						4FI B Wing	0.3
119	M PL S C CB PG CR; B (W) V CT G FG; OTHER	↓		DR	(A) B C D; RM CTR; FL CL						002	3.2
120	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W		W	(A) B C D; RM CTR; FL CL							~~0.7~~
121	M PL S C CB PG CR; B (W) V CT G FG; OTHER	Blc		CB	(A) B C D; RM CTR; FL CL							13.6
122	M (PL) S C CB PG CR; B W V CT G FG; OTHER	W	↓	W	A (B) C D; RM CTR; FL CL							14.2

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS:
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
123	M PL S C CB PG CR B W V CT G FG OTHER	Bie	I	WF	A B C D RM CTR FL CL						002	3.1
124	M PL S C CB PG CR B W V CT G FG OTHER	↓		WS	A B C D RM CTR FL CL							3.4
125	M PL S C CB PG CR B W V CT G FG OTHER	BI		Ladder	A B C D RM CTR FL CL							0.1
126	M PL S C CB PG CR B W V CT G FG OTHER	Y		↓	A B C D RM CTR FL CL							0.0
127	M PL S C CB PG CR B W V CT G FG OTHER	Bic		RC	A B C D RM CTR FL CL							0.1
128	M PL S C CB PG CR B W V CT G FG OTHER	W		W	A B C D RM CTR FL CL							12.3
129	M PL S C CB PG CR B W V CT G FG OTHER	W		Cabinet	A B C D RM CTR FL CL							0.0
130	M PL S C CB PG CR B W V CT G FG OTHER	↓		DW	A B C D RM CTR FL CL							0.1
131	M PL S C CB PG CR B W V CT G FG OTHER	↓		W	A B C D RM CTR FL CL							14.2
132	M PL S C CB PG CR B W V CT G FG OTHER	Bie		DR	A B C D RM CTR FL CL						002	3.4
133	M PL S C CB PG CR B W V CT G FG OTHER	Bie		DF	A B C D RM CTR FL CL						CW.ng Hallway	0.6
134	M PL S C CB PG CR B W V CT G FG OTHER	↓		DR	A B C D RM CTR FL CL							0.5
135	M PL S C CB PG CR B W V CT G FG OTHER	W		W	A B C D RM CTR FL CL							-0.2
136	M PL S C CB PG CR B W V CT G FG OTHER	W		W	A B C D RM CTR FL CL							7.7
137	M PL S C CB PG CR B W V CT G FG OTHER	BI		CB	A B C D RM CTR FL CL							1.2
138	M PL S C CB PG CR B W V CT G FG OTHER	W		W	A B C D RM CTR FL CL							6.2
139	M PL S C CB PG CR B W V CT G FG OTHER	W		W	A B C D RM CTR FL CL							7.9
140	M PL S C CB PG CR B W V CT G FG OTHER	W		Lower Particle Board Wall	A B C D RM CTR FL CL							0.2
141	M PL S C CB PG CR B W V CT G FG OTHER	Bie		DF	A B C D RM CTR FL CL						006 CW.ng	0.6
142	M PL S C CB PG CR B W V CT G FG OTHER	Bic	↓	DR	A B C D RM CTR FL CL							1.6

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass ; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608.
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS:
FLOOR #: _____ ROOM #: _____ ROOM NAME: _____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
143	M PL S C CB PG CR; B (W) V CT G FG; OTHER:	W		Shelves/ Cabinet	(A) B C D; RM CTR; FL CL							3.2
144	M (PL) S C CB PG CR; B W V CT G FG; OTHER:	W		W	(A) B C D; RM CTR; FL CL							7.6
145	M (PL) S C CB PG CR; B W V CT G FG; OTHER:	↓		W	(A) (B) D; RM CTR; FL CL							7.2
146	M (PL) S C CB PG CR; B W V CT G FG; OTHER:	↓		W	A B (C) D; RM CTR; FL CL							7.9
147	M PL S C CB PG CR; B (W) V CT G FG; OTHER:	Blc		WF	A B (C) D; RM CTR; FL CL							0.4
148	M PL S C CB PG CR; B (W) V CT G FG; OTHER:	↓		WS	A B (C) D; RM CTR; FL CL							0.6
149	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	W		Stair Rail	A B (C) D; RM CTR; FL CL							4.3
150	M (PL) S C CB PG CR; B V CT G FG; OTHER:	W		W	A B C (D); RM CTR; FL CL							7.9
151	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	W		WF	A B C D; RM CTR; FL CL						Ext 208	0.3
152	M PL S C CB PG CR; B (W) V CT G FG; OTHER:	↓		WS	A B C D; RM CTR; FL CL							0.1
153	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	↓		WF	A B C D; RM CTR; FL CL						Ext 210	0.2
154	M PL S C CB PG CR; B (W) V CT G FG; OTHER:	↓		WS	A B C D; RM CTR; FL CL							0.4
155	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	Bl		Stair. Rail	A B C D; RM CTR; FL CL						outside Copp	0.1
156	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	↕		↓	A B C D; RM CTR; FL CL						Kitchen Storage	0.2
157	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	↓		Fence Playground	A B C D; RM CTR; FL CL						Playground	0.1
158	M PL S C CB PG CR; B W V CT G FG; OTHER:	RED		DR	A B C D; RM CTR; FL CL						Ext Copp.	0.3
159	M PL S C CB PG CR; B W V CT G FG; OTHER:	↓		DF	A B C D; RM CTR; FL CL							0.2
160	M PL S C CB PG CR; B W V CT G FG; OTHER:	Bl		DR	A B C D; RM CTR; FL CL						Ext Wing B Ext	0.1
161	M PL S C CB PG CR; B W V CT G FG; OTHER:	Red		DF	A B C D; RM CTR; FL CL						under Stairs	0.1
162	(M) PL S C CB PG CR; B W V CT G FG; OTHER:	W		WF	A B C D; RM CTR; FL CL						Ext Wing C	0.3

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass ; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: US0048608
CLIENT: SWBOCES/ Pelham UFSD
INSPECTOR(S): M. Douglas
PROJ. MANAGER: L. Abramov

PROJECT NAME: Siwanoy ES Additions and Alterations
PROJECT LOCATION: Siwanoy Elementary School
489 Siwanoy Pl, Pelham, NY 10803
INSPECTION DATE: 05/05/2026

SPACE CHARACTERISTICS:
FLOOR #: _____ ROOM #: _____ ROOM NAME: _____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
63	(M) PL S C CB PG CR B W V CT G FG OTHER	W	I	WS	A B C D RM CTR FL CL						Ext Wing C	0.0
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER				A B C D RM CTR FL CL							

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

APPENDIX F:
POLYCHLORINATED BIPHENYLS DATA SHEETS WITH CHAIN OF CUSTODY & LABORATORY RESULTS

Technical Report

prepared for:

WSP USA (New York, NY)
One Penn Plaza, 4th Floor
New York NY, 10119
Attention: Leonid Abramov

Report Date: 05/18/2026
Client Project ID: Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803
Project (SDG) No.: 26E0516

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.alsglobal.com/usaenviro (203) 325-1371 FAX (203) 357-0166 nastr.clientservices@alsglobal.com

Report Date: 05/18/2026
Client Project ID: Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803
Project (SDG) No.: 26E0516

WSP USA (New York, NY)
One Penn Plaza, 4th Floor
New York NY, 10119
Attention: Leonid Abramov

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on May 12, 2026 and listed below. The project was identified as your project: **Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

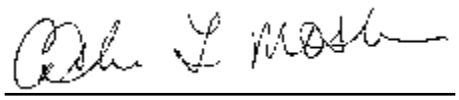
The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
26E0516-01	A01/02/03 Exterior Window Caulking (Gray/White	Caulk	05/11/2026	05/12/2026
26E0516-02	B04/05/06 Firestop (Gray)	Caulk	05/11/2026	05/12/2026
26E0516-03	C07/08/09 Breaching Sealant (Brown)	Caulk	05/11/2026	05/12/2026
26E0516-04	D10/11/12 Duct Sealant (Red)	Caulk	05/11/2026	05/12/2026
26E0516-05	E13/14/15 Interior Window Caulking (White)	Caulk	05/11/2026	05/12/2026
26E0516-06	F16/17/18 Urinal Caulking (White)	Caulk	05/11/2026	05/12/2026

General Notes for Project (SDG) No.: 26E0516

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. ALS' liability for the above data is limited to the dollar value paid to ALS for the referenced project.
4. This report shall not be reproduced without the written approval of ALS, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by ALS.
8. Analyses conducted at ALS, Inc. Stratford, CT are indicated by NYDOH-NY10854, NJDEP-CT005, PADEP-68-04440, CTDPH-PH0840; those conducted at ALS, Inc., Richmond Hill, NY are indicated by NYDOH-NY12058, NJDEP-NY037, CTDPH-PH0837, NHDES-NH2097, MDDEP-375, PADEP-68-06231.

Approved By: 

Cassie Mosher
Laboratory Manager Stratford

Date: 05/18/2026

Positive Hits Included in This Report

Excludes Subcontracted Analysis

No positive hits found

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-01**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	A01/02/03 Exterior Window Caulking (Gray/White)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-01**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1221	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1232	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1242	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1248	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1254	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1260	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1262	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
Aroclor 1268	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF
* Total PCBs	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 13:50	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*67.5 %*		*30-120*	*EPA 8082A*	*5/17/26 13:50*
Surrogate: Decachlorobiphenyl	*45.0 %*		*30-120*	*EPA 8082A*	*5/17/26 13:50*

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-02**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	B04/05/06 Firestop (Gray)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-02**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1221	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1232	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1242	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1248	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1254	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1260	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1262	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
Aroclor 1268	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF
* Total PCBs	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:04	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*66.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:04*
Surrogate: Decachlorobiphenyl	*50.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:04*

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-03**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	C07/08/09 Breaching Sealant (Brown)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-03**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1221	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1232	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1242	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1248	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1254	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1260	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1262	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
Aroclor 1268	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF
* Total PCBs	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:17	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*75.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:17*
Surrogate: Decachlorobiphenyl	*86.5 %*		*30-120*	*EPA 8082A*	*5/17/26 14:17*

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-04**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	D10/11/12 Duct Sealant (Red)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-04**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1221	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1232	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1242	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1248	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1254	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1260	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1262	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
Aroclor 1268	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF
* Total PCBs	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:31	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*66.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:31*
Surrogate: Decachlorobiphenyl	*60.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:31*

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-05**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	E13/14/15 Interior Window Caulking (White)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-05**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1221	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1232	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1242	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1248	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1254	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1260	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1262	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
Aroclor 1268	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF
* Total PCBs	ND		U	0.333	0.333	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:45	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*72.5 %*		*30-120*	*EPA 8082A*	*5/17/26 14:45*
Surrogate: Decachlorobiphenyl	*53.5 %*		*30-120*	*EPA 8082A*	*5/17/26 14:45*

Client:	WSP USA (New York, NY)	**Sample ID:**	**26E0516-06**
Client Project:	Siwanoy ES-489 Siwanoy Pl, Pelham, NY 10803	**Date Received:**	05/12/2026
Client Sample ID:	F16/17/18 Urinal Caulking (White)	**Collection Date/Time:**	5/11/26 15:00

Lab ID:	**26E0516-06**	**Laboratory:**	ALS Environmental - Stratford
Analysis:	**Polychlorinated Biphenyls by GC/ECD**	**Matrix:**	Caulk
Prep Method:	Sample Prepared by Method: EPA 3550C		

Parameter	Result	Lab Qualifier	CLP Flag	MDL	RL	Dilution	Units	Reference Method	Extracted	Analyzed Date	By
Aroclor 1016	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1221	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1232	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1242	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1248	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1254	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1260	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1262	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
Aroclor 1268	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF
* Total PCBs	ND		U	0.455	0.455	1	mg/kg	EPA 8082A	5/16/26 6:53	5/17/26 14:58	NF

Surrogate Recoveries	Result	Flag	Acceptance Range	Reference Method	Analyzed
Surrogate: Tetrachloro-m-xylene	*75.5 %*		*30-120*	*EPA 8082A*	*5/17/26 14:58*
Surrogate: Decachlorobiphenyl	*73.0 %*		*30-120*	*EPA 8082A*	*5/17/26 14:58*

Certified Analyses included in this Report

Analyte	CAS #	Certifications
EPA 8082A in Caulk		
Aroclor 1016	12674-11-2	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1221	11104-28-2	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1232	11141-16-5	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1242	53469-21-9	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1248	12672-29-6	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1254	11097-69-1	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1260	11096-82-5	NYSDOH-NY10854,CTDPH-PH-0840,NJDEP-CT005,PADEP-68-04440
Aroclor 1262	37324-23-5	NYSDOH-NY10854,NJDEP-CT005,PADEP-68-04440
Aroclor 1268	11100-14-4	NYSDOH-NY10854,NJDEP-CT005,PADEP-68-04440

List of Certifications

Code	Description	Number	Expires
CTDPH-PH-0840	CTDPH - Stratford	PH-0840	06/30/2027
NJDEP-CT005	NJDEP Certification - Stratford	CT005	06/30/2026
NYSDOH-NY10854	NYSDOH NELAC/ELAP Program - Stratford	NY ELAP-10854	04/01/2027
PADEP-68-04440	PADEP Registration - Stratford	68-04440	09/30/2026

Analytical Batch Summary

Batch ID: BE60974	**Preparation Method:** EPA 3550C	**Prepared By:** MM
Sample ID	**Client Sample ID**	**Preparation Date**
26E0516-01	A01/02/03 Exterior Window Caulking (Gray	05/16/26
26E0516-02	B04/05/06 Firestop (Gray)	05/16/26
26E0516-03	C07/08/09 Breaching Sealant (Brown)	05/16/26
26E0516-04	D10/11/12 Duct Sealant (Red)	05/16/26
26E0516-05	E13/14/15 Interior Window Caulking (White	05/16/26
26E0516-06	F16/17/18 Urinal Caulking (White)	05/16/26
BE60974-BLK1	Blank	05/16/26
BE60974-BS1	LCS	05/16/26
BE60974-BSD1	LCS Dup	05/16/26

Polychlorinated Biphenyls by GC/ECD - Quality Control Data

ALS Environmental - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BE60974 - EPA 3550C											
Blank (BE60974-BLK1)							Prepared: 05/16/2026 Analyzed: 05/17/2026				
Aroclor 1016	ND	0.312	mg/kg								
Aroclor 1016 [2C]	ND	0.312	mg/kg								
Aroclor 1221	ND	0.312	mg/kg								
Aroclor 1221 [2C]	ND	0.312	mg/kg								
Aroclor 1232	ND	0.312	mg/kg								
Aroclor 1232 [2C]	ND	0.312	mg/kg								
Aroclor 1242	ND	0.312	mg/kg								
Aroclor 1242 [2C]	ND	0.312	mg/kg								
Aroclor 1248	ND	0.312	mg/kg								
Aroclor 1248 [2C]	ND	0.312	mg/kg								
Aroclor 1254	ND	0.312	mg/kg								
Aroclor 1254 [2C]	ND	0.312	mg/kg								
Aroclor 1260	ND	0.312	mg/kg								
Aroclor 1260 [2C]	ND	0.312	mg/kg								
Aroclor 1262	ND	0.312	mg/kg								
Aroclor 1262 [2C]	ND	0.312	mg/kg								
Aroclor 1268	ND	0.312	mg/kg								
Aroclor 1268 [2C]	ND	0.312	mg/kg								
Total PCBs	ND	0.312	mg/kg								
Total PCBs [2C]	ND	0.312	mg/kg								
Surrogate: Tetrachloro-m-xylene	*1.09*		*mg/kg*	*1.25*		*87.0*	*30-120*				
Surrogate: Tetrachloro-m-xylene [2C]	*1.01*		*mg/kg*	*1.25*		*80.5*	*30-120*				
Surrogate: Decachlorobiphenyl	*0.900*		*mg/kg*	*1.25*		*72.0*	*30-120*				
Surrogate: Decachlorobiphenyl [2C]	*0.831*		*mg/kg*	*1.25*		*66.5*	*30-120*				
LCS (BE60974-BS1)							Prepared: 05/16/2026 Analyzed: 05/17/2026				
Aroclor 1016	5.78	0.312	mg/kg	6.25		92.6	40-130				
Aroclor 1260	5.93	0.312	mg/kg	6.25		94.9	40-130				
Surrogate: Tetrachloro-m-xylene	*0.944*		*mg/kg*	*1.25*		*75.5*	*30-120*				
Surrogate: Tetrachloro-m-xylene [2C]	*0.881*		*mg/kg*	*1.25*		*70.5*	*30-120*				
Surrogate: Decachlorobiphenyl	*0.719*		*mg/kg*	*1.25*		*57.5*	*30-120*				
Surrogate: Decachlorobiphenyl [2C]	*0.719*		*mg/kg*	*1.25*		*57.5*	*30-120*				

Polychlorinated Biphenyls by GC/ECD - Quality Control Data

ALS Environmental - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BE60974 - EPA 3550C											
LCS Dup (BE60974-BSD1)						Prepared: 05/16/2026 Analyzed: 05/17/2026					
Aroclor 1016	5.30	0.312	mg/kg	6.25		84.9	40-130		8.68	25	
Aroclor 1260	5.51	0.312	mg/kg	6.25		88.2	40-130		7.27	30	
Surrogate: Tetrachloro-m-xylene	*0.944*		*mg/kg*	*1.25*		*75.5*	*30-120*				
Surrogate: Tetrachloro-m-xylene [2C]	*0.894*		*mg/kg*	*1.25*		*71.5*	*30-120*				
Surrogate: Decachlorobiphenyl	*0.769*		*mg/kg*	*1.25*		*61.5*	*30-120*				
Surrogate: Decachlorobiphenyl [2C]	*0.719*		*mg/kg*	*1.25*		*57.5*	*30-120*				

Sample and Data Qualifiers Relating to This Work Order

/\	Analyte is not certified but the state of sample origination offer certification for the Analyte
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
S-08	The recovery of this surrogate was outside of QC limits.
S-GC	Two surrogates are used for this analysis. One surrogate recovered within control limits therefore the analysis is acceptable.

CLP Flags

B	Blank Contamination. The analyte was also detected in the method blank.
D	Diluted sample result. The sample was diluted before analysis.
E	Exceeds Calibration range. Result is above the instruments' linear calibration range.
H	Holding time exceeded. The sample was anlayzed after the recommended/required holding time.
J	Estimated Value. Result is above the Method Detection Limit (MDL) but below the Reporting Limit (RL).
N	Tentatively Identified Compound (TIC). The compound is presumptively identified but not confirmed with a standard.
P	Poor Precision / duplicate variance. Indicates poor agreement between duplicates (e.g. matrix spike duplicates or lab duplicates).
U	Not Detected. Analyte not detected above laboratory's established reporting limit.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.

Non-Dir. Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, ALS reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

PCB SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: US0048608.1475
CLIENT: SW BOCES / Pelham Union Free School District
PROJECT SITE: Siwanoy ES – 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: interior & Exterior
PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)
DATE(S) OF INSPECTION: 5/5/2026 - 5/7/2026 26E0516
Inspector(s): Ivan Grujovic; Leonid Abramov; Martin Douglas

WSP USA
TELEPHONE # : (212) 612-7900
ADDRESS: Penn 1, 4th Floor, New York, NY

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐48 HR ☐72 HR ☐96 HR ☐120 HR ● 1 WK

LAB SAMPLE NO.	HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
	A	01	Exterior Window Caulking (Gray/White)	Exterior, outside Classroom 007		
		02		Exterior, outside Classroom 101		
		03		Exterior, outside Classroom 203		
	B	04	Firestop (Gray)	Ground Floor, Boiler Room		
		05				
		06				
	C	07	Breeching Sealant (Brown)	Ground Floor, Boiler Room		
		08				
		09				
	D	10	Duct Sealant (Red)	2nd Floor, Girls' Bathroom 209		
		11				
		12		1st Floor, Boys' Bathroom 107		

CHAIN OF CUSTODY

Relinquished by:	(Sign)		Received by:	(Sign)		
IVAN GRUJOVIC		5/12/26 0907 AM/PM	(print)			AM/PM
(print)	(Sign)		Received by: (print)	(Sign)		
		5/12/26 09:07 AM/PM			5/12/26 04:07 PM	AM/PM
Relinquished by: (print)	(Sign)		Received by: (print)	(Sign)		
		5/12/26 16:20 AM/PM			5/12/26	AM/PM

Rel: 5/12/26 18:25 Rec: 5/12/26 20:50 5/12/26 22:50 21:5

LAB INSTRUCTIONS: create one (1) composite sample of each homogeneous material from equal mass portions (± 5%) of the three (3) sub-samples for extraction and analysis via EPA Method 8082 and report the Arochlors listed (Arochlor 1016, Arochlor 1221, Arochlor 1232, Arochlor 1242, Arochlor 1248, Arochlor 1254, Arochlor 1260). The laboratory shall target a PCB detection limit of 1 ppm

PCB SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJECT ID: US0048608.1475
CLIENT: SW BOCES / Pelham Union Free School District
PROJECT SITE: Siwanoy ES - 489 Siwanoy Pl, Pelham, NY 10803
Project Manager: Leonid Abramov

LOCATION(S) SURVEYED: interior & Exterior
PROPOSED PROJECT: Additions and Alternations (SED # 61-16-01-03-0-004-014)
DATE(S) OF INSPECTION: 5/5/2026 - 5/7/2026 26E0516
Inspector(s): Ivan Grujovic; Leonid Abramov; Martin Douglas

WSP USA
TELEPHONE # : (212) 612-7900
ADDRESS: Penn 1, 4th Floor, New York, NY

RESULTS TO: Lb.Labresults@wsp.com; Ivan.Grujovic@wsp.com; Leonid.Abramov@wsp.com; Alexander.Smolyar@wsp.com

TURNAROUND TIME: ☐48 HR ☐72 HR ☐96 HR ☐ 120 HR ● 1 WK

LAB SAMPLE NO.	HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
	E	13	Interior Window Caulking (White)	1st Floor, Principal's Office		
		14				
		15				
	F	16	Urinal Caulking (White)	1st Floor, Boys' Bathroom 107		
		17				
		18				

CHAIN OF CUSTODY

Relinquished by (print)	(Sign)	Date	Time	Received by (print)	(Sign)	Date	Time	Relinquished by (print)	(Sign)	Date	Time	Received by (print)	(Sign)	Date	Time
IVAN GRUJOVIC		5/12/26	0907												
		5/12/26	0907			5/12/26	0907		MAS	5/12/26					

Received 5/12/26 18:25 Rel. 5/12/26 20:50 Received W 5/12/26 20:50 21.1

LAB INSTRUCTIONS: create one (1) composite sample of each homogeneous material from equal mass portions (± 5%) of the three (3) sub-samples for extraction and analysis via EPA Method 8082 and report the Arochlors listed (Arochlor 1016, Arochlor 1221, Arochlor 1232, Arochlor 1242, Arochlor 1248, Arochlor 1254, Arochlor 1260). The laboratory shall target a PCB detection limit of 1 ppm

APPENDIX G:
COMPANY LICENSE, PERSONAL CERTIFICATIONS AND LABORATORY ACCREDITATIONS

NEW YORK STATE | Department of Labor

WORKING FOR YOU

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

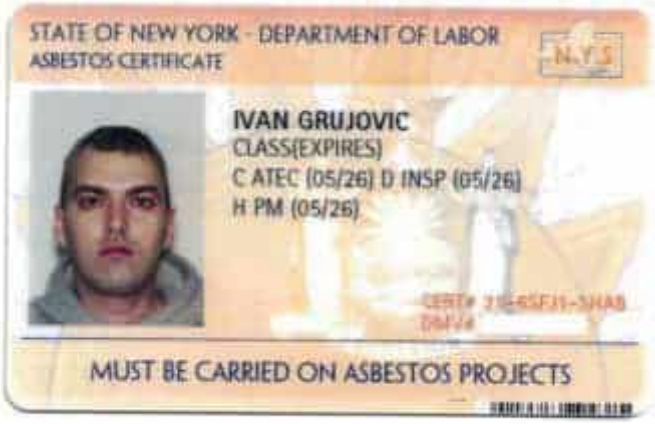
WSP USA Inc.
One Penn Plaza, 4th Floor, New York, NY 10119

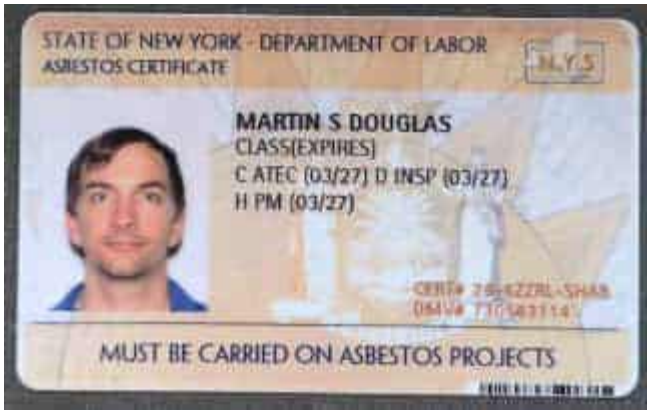
License Number: 28575
License Class: RESTRICTED
Date of Issue: 04/10/2026
Expiration Date: 04/30/2027
Duly Authorized Representative: Prakash Saha

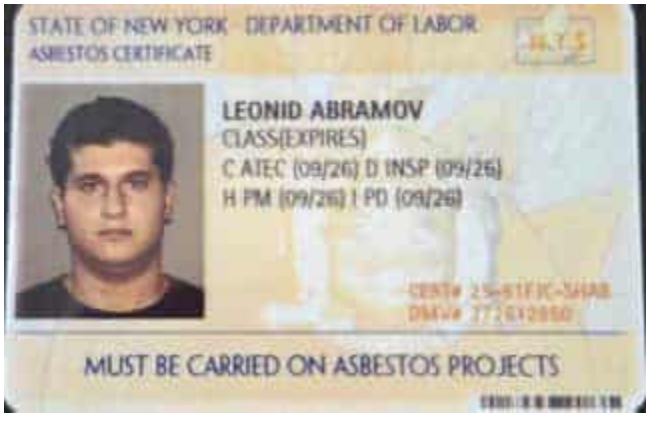
This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Vicki Mockler, Director
For the Commissioner of Labor


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S.
IVAN GRUJOVIC
CLASS(EXPIRES)
C ATEC (05/26) D INSP (05/26)
H PM (05/26)
MUST BE CARRIED ON ASBESTOS PROJECTS


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S.
MARTIN S DOUGLAS
CLASS(EXPIRES)
C ATEC (03/27) D INSP (03/27)
H PM (03/27)
MUST BE CARRIED ON ASBESTOS PROJECTS


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S.
LEONID ABRAMOV
CLASS(EXPIRES)
C ATEC (09/26) D INSP (09/26)
H PM (09/26) I PD (09/26)
MUST BE CARRIED ON ASBESTOS PROJECTS

United States Environmental Protection Agency

This is to certify that



Martin S Douglas

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires October 06, 2027

LBP-I-I270412-1

Certification #

September 22, 2024

Issued On

Ben Conetta, Manager

Chemicals and Multimedia Programs Branch

United States Environmental Protection Agency

This is to certify that



Leonid Abramov

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires February 20, 2027

LBP-I-19870-3

Certification #

February 06, 2024

Issued On

Ben Conetta, Chief

Chemicals and Multimedia Programs Branch

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. JACKIE DARVISH
ATLAS ENVIRONMENTAL LABS CORP
255 W 36TH STREET SUITE 1503
NEW YORK, NY 10018

NY Lab Id No: 11999

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Mate	Item 198.8 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

	EPA 3050B

Serial No.: 72361

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online.

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 500092-0

Atlas Environmental Lab (Asbestos in Bulk)

New York, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2025-10-01 through 2026-09-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. EMANUEL DIMITRAKAS
LABORATORY TESTING SERVICES INC
40-20 22ND ST
LONG ISLAND CITY, NY 11101

NY Lab Id No: 10955

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved subcategories and/or analytes are listed below:

Metals I

Lead, Total	NIOSH 7082

Miscellaneous

Asbestos	40 CFR 763 APX A No. III
Fibers	NIOSH 7400 A RULES

Serial No.: 72000

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

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MR. EMANUEL DIMITRAKAS
LABORATORY TESTING SERVICES INC
40-20 22ND ST
LONG ISLAND CITY, NY 11101

NY Lab Id No: 10955

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Mate	Item 198.8 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

	ASTM D3335-85A
	ASTM E-1644-17

Serial No.: 71999

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101958-0

Laboratory Testing Services Inc.

Long Island City, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2025-07-01 through 2026-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

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WADSWORTH CENTER

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MR. SCOTT HALL
ALS ENVIRONMENTAL - STRATFORD
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260D
	EPA 624.1
Acrylonitrile	EPA 8260D
	EPA 624.1
Methyl methacrylate	EPA 8260D
Amines	
1,2-Diphenylhydrazine	EPA 8270E
2-Nitroaniline	EPA 8270E
3-Nitroaniline	EPA 8270E
4-Chloroaniline	EPA 8270E
4-Nitroaniline	EPA 8270E
Aniline	EPA 625.1
	EPA 8270E
Carbazole	EPA 625.1
	EPA 8270E
Diphenylamine	EPA 8270E
Pyridine	EPA 625.1
	EPA 8270E
Benzidines	
3,3'-Dichlorobenzidine	EPA 625.1
	EPA 8270E
Benzidine	EPA 625.1
	EPA 8270E
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
	EPA 608.3

Serial No.: 71953

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All approved analytes are listed below:

Chlorinated Hydrocarbon Pesticides

4,4'-DDE	EPA 8081B
	EPA 608.3
4,4'-DDT	EPA 8081B
	EPA 608.3
Aldrin	EPA 8081B
	EPA 608.3
alpha-BHC	EPA 8081B
	EPA 608.3
alpha-Chlordane	EPA 8081B
beta-BHC	EPA 8081B
	EPA 608.3
Chlordane Total	EPA 8081B
	EPA 608.3
delta-BHC	EPA 8081B
	EPA 608.3
Dieldrin	EPA 8081B
	EPA 608.3
Endosulfan I	EPA 8081B
	EPA 608.3
Endosulfan II	EPA 8081B
	EPA 608.3
Endosulfan sulfate	EPA 8081B
	EPA 608.3
Endrin	EPA 8081B
	EPA 608.3
Endrin aldehyde	EPA 8081B
	EPA 608.3

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Chlorinated Hydrocarbon Pesticides

Endrin Ketone	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608.3
Heptachlor epoxide	EPA 8081B
	EPA 608.3
Lindane	EPA 8081B
	EPA 608.3
Methoxychlor	EPA 8081B
	EPA 608.3
Mirex	EPA 8081B
Toxaphene	EPA 8081B
	EPA 608.3
trans-Chlordane	EPA 8081B

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260D
1,2,4,5-Tetrachlorobenzene	EPA 8270E
1,2,4-Trichlorobenzene	EPA 625.1
	EPA 8270E
2-Chloronaphthalene	EPA 625.1
	EPA 8270E
Hexachlorobenzene	EPA 8270E
Hexachlorobutadiene	EPA 625.1
	EPA 8270E
Hexachlorocyclopentadiene	EPA 625.1
	EPA 8270E
Hexachloroethane	EPA 625.1
	EPA 8270E

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Chlorinated Hydrocarbons	
Pentachlorobenzene	EPA 8270E
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
	SM 6640B-2006
2,4-D	EPA 8151A
Dicamba	EPA 8151A
Demand	
Biochemical Oxygen Demand	SM 5210B-2016
Carbonaceous BOD	SM 5210B-2016
Chemical Oxygen Demand	SM 5220D-2011
Fuel Oxygenates	
Di-isopropyl ether	EPA 8260D
Ethanol	EPA 8260D
Methyl tert-butyl ether	EPA 8260D
tert-amyl alcohol	EPA 8260D
tert-amyl methyl ether (TAME)	EPA 8260D
tert-butyl alcohol	EPA 8260D
tert-butyl ethyl ether (ETBE)	EPA 8260D
Haloethers	
2,2'-Oxybis(1-chloropropane)	EPA 625.1
	EPA 8270E
4-Bromophenylphenyl ether	EPA 625.1
	EPA 8270E
4-Chlorophenylphenyl ether	EPA 625.1
	EPA 8270E

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Haloethers

Bis(2-chloroethoxy)methane	EPA 625.1
	EPA 8270E
Bis(2-chloroethyl)ether	EPA 625.1
	EPA 8270E

Low Level Polynuclear Aromatics

Acenaphthene Low Level	EPA 8270E
	EPA 8270E SIM
Acenaphthylene Low Level	EPA 8270E
	EPA 8270E SIM
Anthracene Low Level	EPA 8270E
	EPA 8270E SIM
Benzo(a)anthracene Low Level	EPA 8270E
	EPA 8270E SIM
Benzo(a)pyrene Low Level	EPA 8270E
	EPA 8270E SIM
Benzo(b)fluoranthene Low Level	EPA 8270E
	EPA 8270E SIM
Benzo(g,h,i)perylene Low Level	EPA 8270E
	EPA 8270E SIM
Benzo(k)fluoranthene Low Level	EPA 8270E
	EPA 8270E SIM
Chrysene Low Level	EPA 8270E
	EPA 8270E SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270E
	EPA 8270E SIM
Fluoranthene Low Level	EPA 8270E
	EPA 8270E SIM

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All approved analytes are listed below:

Low Level Polynuclear Aromatics

Fluorene Low Level	EPA 8270E
	EPA 8270E SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270E
	EPA 8270E SIM
Naphthalene Low Level	EPA 8270E
	EPA 8270E SIM
Phenanthrene Low Level	EPA 8270E
	EPA 8270E SIM
Pyrene Low Level	EPA 8270E
	EPA 8270E SIM

Metals I

Barium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Cadmium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Calcium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
Chromium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Copper, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D

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All approved analytes are listed below:

Metals I

Copper, Total	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Iron, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Lead, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Magnesium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
Manganese, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Nickel, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Potassium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
Silver, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Sodium, Total	EPA 200.7, Rev. 4.4 (1994)

Serial No.: 71953

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120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

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All approved analytes are listed below:

Metals I

Sodium, Total	EPA 6010D

Metals II

Aluminum, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Antimony, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Arsenic, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Beryllium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Chromium VI	EPA 7196A
	SM 3500-Cr B-2011
Mercury, Total	EPA 245.1, Rev. 3.0 (1994)
	EPA 7470A
Selenium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
Vanadium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B

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All approved analytes are listed below:

Metals II	
Vanadium, Total	EPA 200.8, Rev. 5.4 (1994)
Zinc, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Metals III	
Cobalt, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Molybdenum, Total	EPA 200.8, Rev. 5.4 (1994)
Thallium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010D
	EPA 6020B
	EPA 200.8, Rev. 5.4 (1994)
Tin, Total	EPA 200.8, Rev. 5.4 (1994)
Titanium, Total	EPA 200.8, Rev. 5.4 (1994)
Mineral	
Alkalinity	SM 2320B-2011
Calcium Hardness	EPA 200.7, Rev. 4.4 (1994)
Chloride	EPA 300.0, Rev. 2.1 (1993)
Fluoride, Total	EPA 300.0, Rev. 2.1 (1993)
Hardness, Total	SM 2340B-2011
Sulfate (as SO4)	EPA 300.0, Rev. 2.1 (1993)
Miscellaneous	
Boron, Total	EPA 200.8, Rev. 5.4 (1994)

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All approved analytes are listed below:

Miscellaneous

Color	SM 2120B-2011
Cyanide, Total	SM 4500-CN E-2016
non-Polar Extractable Material (TPH)	EPA 1664A
Oil and Grease Total Recoverable	EPA 1664A
Organic Carbon, Total	SM 5310B-2014
Phenols	EPA 420.1 (Rev. 1978)
Specific Conductance	EPA 120.1 (Rev. 1982)
Sulfide (as S)	SM 4500-S2- F-2011
Surfactant (MBAS)	SM 5540C-2011
Turbidity	EPA 180.1, Rev. 2.0 (1993)

Nitroaromatics and Isophorone

2,4-Dinitrotoluene	EPA 625.1
	EPA 8270E
2,6-Dinitrotoluene	EPA 625.1
	EPA 8270E
Isophorone	EPA 625.1
	EPA 8270E
Nitrobenzene	EPA 625.1
	EPA 8270E

Nitrosoamines

N-Nitrosodimethylamine	EPA 625.1
	EPA 8270E
N-Nitrosodi-n-propylamine	EPA 625.1
	EPA 8270E
N-Nitrosodiphenylamine	EPA 625.1
	EPA 8270E

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All approved analytes are listed below:

Nutrient	
Ammonia (as N)	SM 4500-NH3 D-2011 or E-2011
Kjeldahl Nitrogen, Total	SM 4500-N Org D-2011
	SM 4500-NH3 D-2011 or E-2011
Nitrate (as N)	EPA 300.0, Rev. 2.1 (1993)
Nitrate plus Nitrite (as N)	EPA 300.0, Rev. 2.1 (1993)
Nitrite (as N)	EPA 300.0, Rev. 2.1 (1993)
Orthophosphate (as P)	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-P E-2011
Phosphorus, Total	SM 4500-P E-2011
Organophosphate Pesticides	
Atrazine	EPA 8270E
Parathion ethyl	EPA 8270E
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015D
Gasoline Range Organics	EPA 8015D
Phthalate Esters	
Benzyl butyl phthalate	EPA 625.1
	EPA 8270E
Bis(2-ethylhexyl) phthalate	EPA 625.1
	EPA 8270E
Diethyl phthalate	EPA 625.1
	EPA 8270E
Dimethyl phthalate	EPA 625.1
	EPA 8270E
Di-n-butyl phthalate	EPA 625.1
	EPA 8270E

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. SCOTT HALL
ALS ENVIRONMENTAL - STRATFORD
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Phthalate Esters	
Di-n-octyl phthalate	EPA 625.1
	EPA 8270E
Polychlorinated Biphenyls	
Aroclor 1016 (PCB-1016)	EPA 8082A
	EPA 608.3
Aroclor 1221 (PCB-1221)	EPA 8082A
	EPA 608.3
Aroclor 1232 (PCB-1232)	EPA 8082A
	EPA 608.3
Aroclor 1242 (PCB-1242)	EPA 8082A
	EPA 608.3
Aroclor 1248 (PCB-1248)	EPA 8082A
	EPA 608.3
Aroclor 1254 (PCB-1254)	EPA 8082A
	EPA 608.3
Aroclor 1260 (PCB-1260)	EPA 8082A
	EPA 608.3
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Polynuclear Aromatics	
Acenaphthene	EPA 625.1
	EPA 8270E
Acenaphthylene	EPA 625.1
	EPA 8270E
Anthracene	EPA 625.1
	EPA 8270E

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Polynuclear Aromatics

Benzo(a)anthracene	EPA 625.1
	EPA 8270E
Benzo(a)pyrene	EPA 625.1
	EPA 8270E
Benzo(b)fluoranthene	EPA 625.1
	EPA 8270E
Benzo(g,h,i)perylene	EPA 625.1
	EPA 8270E
Benzo(k)fluoranthene	EPA 625.1
	EPA 8270E
Chrysene	EPA 625.1
	EPA 8270E
Dibenzo(a,h)anthracene	EPA 625.1
	EPA 8270E
Fluoranthene	EPA 625.1
	EPA 8270E
Fluorene	EPA 625.1
	EPA 8270E
Indeno(1,2,3-cd)pyrene	EPA 625.1
	EPA 8270E
Naphthalene	EPA 625.1
	EPA 8270E
Phenanthrene	EPA 8270E
Pyrene	EPA 625.1
	EPA 8270E

Priority Pollutant Phenols

2,3,4,6 Tetrachlorophenol	EPA 8270E

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Priority Pollutant Phenols

2,4,5-Trichlorophenol	EPA 625.1
	EPA 8270E
2,4,6-Trichlorophenol	EPA 625.1
	EPA 8270E
2,4-Dichlorophenol	EPA 625.1
	EPA 8270E
2,4-Dimethylphenol	EPA 625.1
	EPA 8270E
2,4-Dinitrophenol	EPA 8270E
2-Chlorophenol	EPA 625.1
	EPA 8270E
2-Methyl-4,6-dinitrophenol	EPA 625.1
	EPA 8270E
2-Methylphenol	EPA 625.1
	EPA 8270E
2-Nitrophenol	EPA 625.1
	EPA 8270E
4-Chloro-3-methylphenol	EPA 625.1
	EPA 8270E
4-Methylphenol	EPA 625.1
	EPA 8270E
4-Nitrophenol	EPA 625.1
	EPA 8270E
Cresols, Total	EPA 8270E
Pentachlorophenol	EPA 625.1
	EPA 8270E
Phenol	EPA 625.1

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Priority Pollutant Phenols	
Phenol	EPA 8270E
Residue	
Settleable Solids	SM 2540 F-2015
Solids, Total	SM 2540 B-2015
Solids, Total Dissolved	SM 2540 C-2015
Solids, Total Suspended	SM 2540 D-2015
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270E
1,2-Dichlorobenzene, Semi-volatile	EPA 8270E
1,3-Dichlorobenzene, Semi-volatile	EPA 8270E
1,4-Dichlorobenzene, Semi-volatile	EPA 8270E
2-Methylnaphthalene	EPA 8270E
Acetophenone	EPA 8270E
alpha-Terpineol	EPA 625.1
	EPA 8270E
Benzaldehyde	EPA 8270E
Benzoic Acid	EPA 8270E
Benzyl alcohol	EPA 8270E
Caprolactam	EPA 8270E
Dibenzofuran	EPA 8270E
Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260D
1,2,4-Trimethylbenzene	EPA 8260D
1,2-Dichlorobenzene	EPA 8260D
	EPA 624.1
1,3,5-Trimethylbenzene	EPA 8260D

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Volatile Aromatics

1,3-Dichlorobenzene	EPA 8260D
	EPA 624.1
1,4-Dichlorobenzene	EPA 8260D
	EPA 624.1
2-Chlorotoluene	EPA 8260D
4-Chlorotoluene	EPA 8260D
Benzene	EPA 8260D
	EPA 624.1
Bromobenzene	EPA 8260D
Chlorobenzene	EPA 8260D
	EPA 624.1
Ethyl benzene	EPA 8260D
	EPA 624.1
Isopropylbenzene	EPA 8260D
m/p-Xylenes	EPA 8260D
	EPA 624.1
Naphthalene, Volatile	EPA 8260D
n-Butylbenzene	EPA 8260D
n-Propylbenzene	EPA 8260D
o-Xylene	EPA 8260D
	EPA 624.1
p-Isopropyltoluene (P-Cymene)	EPA 8260D
sec-Butylbenzene	EPA 8260D
Styrene	EPA 8260D
	EPA 624.1
tert-Butylbenzene	EPA 8260D
Toluene	EPA 8260D

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Volatile Aromatics

Toluene	EPA 624.1
Total Xylenes	EPA 8260D
	EPA 624.1

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 8260D
1,1,1-Trichloroethane	EPA 8260D
	EPA 624.1
1,1,2,2-Tetrachloroethane	EPA 8260D
	EPA 624.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260D
1,1,2-Trichloroethane	EPA 8260D
	EPA 624.1
1,1-Dichloroethane	EPA 8260D
	EPA 624.1
1,1-Dichloroethene	EPA 8260D
	EPA 624.1
1,1-Dichloropropene	EPA 8260D
1,2,3-Trichloropropane	EPA 8260D
1,2-Dibromo-3-chloropropane	EPA 8260D
1,2-Dibromoethane	EPA 8260D
1,2-Dichloroethane	EPA 8260D
	EPA 624.1
1,2-Dichloropropane	EPA 8260D
	EPA 624.1
1,3-Dichloropropane	EPA 8260D
2,2-Dichloropropane	EPA 8260D
2-Chloroethylvinyl ether	EPA 8260D

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Volatile Halocarbons

2-Chloroethylvinyl ether	EPA 624.1
Bromochloromethane	EPA 8260D
Bromodichloromethane	EPA 8260D
	EPA 624.1
Bromoform	EPA 8260D
	EPA 624.1
Bromomethane	EPA 8260D
	EPA 624.1
Carbon tetrachloride	EPA 8260D
	EPA 624.1
Chloroethane	EPA 8260D
	EPA 624.1
Chloroform	EPA 8260D
	EPA 624.1
Chloromethane	EPA 8260D
	EPA 624.1
cis-1,2-Dichloroethene	EPA 8260D
	EPA 624.1
cis-1,3-Dichloropropene	EPA 8260D
	EPA 624.1
Dibromochloromethane	EPA 8260D
	EPA 624.1
Dibromomethane	EPA 8260D
Dichlorodifluoromethane	EPA 8260D
	EPA 624.1
Hexachlorobutadiene, Volatile	EPA 8260D
Methylene chloride	EPA 8260D

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Volatile Halocarbons

Methylene chloride	EPA 624.1
Tetrachloroethene	EPA 8260D
	EPA 624.1
trans-1,2-Dichloroethene	EPA 8260D
	EPA 624.1
trans-1,3-Dichloropropene	EPA 8260D
	EPA 624.1
trans-1,4-Dichloro-2-butene	EPA 8260D
Trichloroethene	EPA 8260D
	EPA 624.1
Trichlorofluoromethane	EPA 8260D
	EPA 624.1
Vinyl chloride	EPA 8260D
	EPA 624.1

Volatiles Organics

1,4-Dioxane	EPA 8260D
	EPA 8270E
	EPA 8270E SIM
2-Butanone (Methylethyl ketone)	EPA 8260D
2-Hexanone	EPA 8260D
4-Methyl-2-Pentanone	EPA 8260D
Acetone	EPA 8260D
Carbon Disulfide	EPA 8260D
Cyclohexane	EPA 8260D
Methyl acetate	EPA 8260D
Methyl cyclohexane	EPA 8260D
Vinyl acetate	EPA 8260D

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Sample Preparation Methods

SM 4500-P B(5)-2011

EPA 5030C

SM 4500-CN B-2016 and C-2016

EPA 3015A

EPA 3010A

EPA 3510C

SM 4500-N Org B-2011 or C-2011

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Fuel Additives

Methyl tert-butyl ether	EPA 524.2
Naphthalene	EPA 524.2

Metals I

Arsenic, Total	EPA 200.8 Rev. 5.4
Barium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Cadmium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Chromium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Copper, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Iron, Total	EPA 200.7 Rev. 4.4
Lead, Total	EPA 200.8 Rev. 5.4
Manganese, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Mercury, Total	EPA 245.1 Rev. 3.0
Selenium, Total	EPA 200.8 Rev. 5.4
Silver, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Zinc, Total	EPA 200.7 Rev. 4.4

Metals II

Aluminum, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Antimony, Total	EPA 200.8 Rev. 5.4
Beryllium, Total	EPA 200.7 Rev. 4.4

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Metals II

Beryllium, Total	EPA 200.8 Rev. 5.4
Molybdenum, Total	EPA 200.8 Rev. 5.4
Nickel, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4
Thallium, Total	EPA 200.8 Rev. 5.4
Vanadium, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4

Metals III

Calcium, Total	EPA 200.7 Rev. 4.4
Magnesium, Total	EPA 200.7 Rev. 4.4
Potassium, Total	EPA 200.7 Rev. 4.4
Sodium, Total	EPA 200.7 Rev. 4.4

Miscellaneous

1,4-Dioxane	EPA 522
Turbidity	EPA 180.1 Rev. 2.0

Non-Metals

Alkalinity	SM 21-23 2320B (-97)
Calcium Hardness	EPA 200.7 Rev. 4.4
Chloride	EPA 300.0 Rev. 2.1
Color	SM 21-23 2120B (-01)
Fluoride, Total	EPA 300.0 Rev. 2.1
Orthophosphate (as P)	EPA 300.0 Rev. 2.1
	SM 19, 21-23 4500-P E (-99)
Solids, Total Dissolved	SM 21-23 2540C (-97)
Specific Conductance	EPA 120.1 Rev. 1982
Sulfate (as SO4)	EPA 300.0 Rev. 2.1

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Trihalomethanes

Bromodichloromethane	EPA 524.2
Bromoform	EPA 524.2
Chloroform	EPA 524.2
Dibromochloromethane	EPA 524.2
Total Trihalomethanes	EPA 524.2

Volatile Aromatics

1,2,3-Trichlorobenzene	EPA 524.2
1,2,4-Trichlorobenzene	EPA 524.2
1,2,4-Trimethylbenzene	EPA 524.2
1,2-Dichlorobenzene	EPA 524.2
1,3,5-Trimethylbenzene	EPA 524.2
1,3-Dichlorobenzene	EPA 524.2
1,4-Dichlorobenzene	EPA 524.2
2-Chlorotoluene	EPA 524.2
4-Chlorotoluene	EPA 524.2
Benzene	EPA 524.2
Bromobenzene	EPA 524.2
Chlorobenzene	EPA 524.2
Ethyl benzene	EPA 524.2
Hexachlorobutadiene	EPA 524.2
Isopropylbenzene	EPA 524.2
n-Butylbenzene	EPA 524.2
n-Propylbenzene	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 524.2
sec-Butylbenzene	EPA 524.2
Styrene	EPA 524.2
tert-Butylbenzene	EPA 524.2

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Volatile Aromatics

Toluene	EPA 524.2
Total Xylenes	EPA 524.2

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 524.2
1,1,1-Trichloroethane	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 524.2
1,1,2-Trichloroethane	EPA 524.2
1,1-Dichloroethane	EPA 524.2
1,1-Dichloroethene	EPA 524.2
1,1-Dichloropropene	EPA 524.2
1,2,3-Trichloropropane	EPA 524.2
1,2-Dichloroethane	EPA 524.2
1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 524.2
2,2-Dichloropropane	EPA 524.2
Bromochloromethane	EPA 524.2
Bromomethane	EPA 524.2
Carbon tetrachloride	EPA 524.2
Chloroethane	EPA 524.2
Chloromethane	EPA 524.2
cis-1,2-Dichloroethene	EPA 524.2
cis-1,3-Dichloropropene	EPA 524.2
Dibromomethane	EPA 524.2
Dichlorodifluoromethane	EPA 524.2
Methylene chloride	EPA 524.2
Tetrachloroethene	EPA 524.2
trans-1,2-Dichloroethene	EPA 524.2

Serial No.: 71952

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WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. SCOTT HALL
ALS ENVIRONMENTAL - STRATFORD
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Volatile Halocarbons

trans-1,3-Dichloropropene	EPA 524.2
Trichloroethene	EPA 524.2
Trichlorofluoromethane	EPA 524.2
Vinyl chloride	EPA 524.2

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All approved analytes are listed below:

Acrylates

Acrolein (Propenal)	EPA 8260D
Acrylonitrile	EPA 8260D
Methyl methacrylate	EPA 8260D

Amines

1,2-Diphenylhydrazine	EPA 8270E
2-Nitroaniline	EPA 8270E
3-Nitroaniline	EPA 8270E
4-Chloroaniline	EPA 8270E
4-Nitroaniline	EPA 8270E
Aniline	EPA 8270E
Carbazole	EPA 8270E
Diphenylamine	EPA 8270E

Benzidines

3,3'-Dichlorobenzidine	EPA 8270E
Benzidine	EPA 8270E

Characteristic Testing

Corrosivity (pH)	EPA 9045D
Free Liquids	EPA 9095B
Ignitability	EPA 1010A
Synthetic Precipitation Leaching Proc.	EPA 1312
TCLP	EPA 1311

Chlorinated Hydrocarbon Pesticides

4,4'-DDD	EPA 8081B
4,4'-DDE	EPA 8081B
4,4'-DDT	EPA 8081B
Aldrin	EPA 8081B

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All approved analytes are listed below:

Chlorinated Hydrocarbon Pesticides

alpha-BHC	EPA 8081B
alpha-Chlordane	EPA 8081B
Atrazine	EPA 8270E
beta-BHC	EPA 8081B
Chlordane Total	EPA 8081B
delta-BHC	EPA 8081B
Dieldrin	EPA 8081B
Endosulfan I	EPA 8081B
Endosulfan II	EPA 8081B
Endosulfan sulfate	EPA 8081B
Endrin	EPA 8081B
Endrin aldehyde	EPA 8081B
Endrin Ketone	EPA 8081B
Heptachlor	EPA 8081B
Heptachlor epoxide	EPA 8081B
Lindane	EPA 8081B
Methoxychlor	EPA 8081B
Mirex	EPA 8081B
Toxaphene	EPA 8081B
trans-Chlordane	EPA 8081B

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260D
1,2,4,5-Tetrachlorobenzene	EPA 8270D
	EPA 8270E
1,2,4-Trichlorobenzene	EPA 8270E
2-Chloronaphthalene	EPA 8270E
Hexachlorobenzene	EPA 8270E

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All approved analytes are listed below:

Chlorinated Hydrocarbons

Hexachlorobutadiene	EPA 8270E
Hexachlorocyclopentadiene	EPA 8270E
Hexachloroethane	EPA 8270E

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
Dicamba	EPA 8151A

Haloethers

2,2'-Oxybis(1-chloropropane)	EPA 8270E
4-Bromophenylphenyl ether	EPA 8270E
4-Chlorophenylphenyl ether	EPA 8270E
Bis(2-chloroethoxy)methane	EPA 8270E
Bis(2-chloroethyl)ether	EPA 8270E

Metals I

Barium, Total	EPA 6010D
	EPA 6020A
	EPA 6020B
Cadmium, Total	EPA 6010D
	EPA 6020B
Calcium, Total	EPA 6010D
Chromium, Total	EPA 6010D
	EPA 6020B
Copper, Total	EPA 6010D
	EPA 6020B
Iron, Total	EPA 6010D

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Metals I

Lead, Total	EPA 6010D
	EPA 6020A
	EPA 6020B
Magnesium, Total	EPA 6010D
Manganese, Total	EPA 6010D
	EPA 6020B
Nickel, Total	EPA 6010D
	EPA 6020B
Potassium, Total	EPA 6010D
Silver, Total	EPA 6010D
	EPA 6020B
Sodium, Total	EPA 6010D

Metals II

Aluminum, Total	EPA 6010D
	EPA 6020B
Antimony, Total	EPA 6010D
	EPA 6020B
Arsenic, Total	EPA 6010D
	EPA 6020B
Beryllium, Total	EPA 6010D
Chromium VI	EPA 7196A
Mercury, Total	EPA 7471B
	EPA 7473
Selenium, Total	EPA 6010D
	EPA 6020B
Vanadium, Total	EPA 6010D
	EPA 6020B

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Metals II	
Zinc, Total	EPA 6010D
	EPA 6020B
Metals III	
Cobalt, Total	EPA 6010D
	EPA 6020B
Thallium, Total	EPA 6010D
	EPA 6020A
	EPA 6020B
Tin, Total	EPA 6020B
Miscellaneous	
Boron, Total	EPA 6020A
	EPA 6020B
Cyanide, Total	EPA 9014
Nitroaromatics and Isophorone	
2,4-Dinitrotoluene	EPA 8270E
2,6-Dinitrotoluene	EPA 8270E
Isophorone	EPA 8270E
Nitrobenzene	EPA 8270E
Pyridine	EPA 8270E
Nitrosoamines	
N-Nitrosodimethylamine	EPA 8270E
N-Nitrosodi-n-propylamine	EPA 8270E
N-Nitrosodiphenylamine	EPA 8270E
Organophosphate Pesticides	
Parathion ethyl	EPA 8270E

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Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015D
Gasoline Range Organics	EPA 8015D
Phthalate Esters	
Benzyl butyl phthalate	EPA 8270E
Bis(2-ethylhexyl) phthalate	EPA 8270E
Diethyl phthalate	EPA 8270E
Dimethyl phthalate	EPA 8270E
Di-n-butyl phthalate	EPA 8270E
Di-n-octyl phthalate	EPA 8270E
Polychlorinated Biphenyls	
Aroclor 1016 (PCB-1016)	EPA 8082A
Aroclor 1016 (PCB-1016) in Oil	EPA 8082A
Aroclor 1221 (PCB-1221)	EPA 8082A
Aroclor 1221 (PCB-1221) in Oil	EPA 8082A
Aroclor 1232 (PCB-1232)	EPA 8082A
Aroclor 1232 (PCB-1232) in Oil	EPA 8082A
Aroclor 1242 (PCB-1242)	EPA 8082A
Aroclor 1242 (PCB-1242) in Oil	EPA 8082A
Aroclor 1248 (PCB-1248)	EPA 8082A
Aroclor 1248 (PCB-1248) in Oil	EPA 8082A
Aroclor 1254 (PCB-1254)	EPA 8082A
Aroclor 1254 (PCB-1254) in Oil	EPA 8082A
Aroclor 1260 (PCB-1260)	EPA 8082A
Aroclor 1260 (PCB-1260) in Oil	EPA 8082A
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1262 (PCB-1262) in Oil	EPA 8082A

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All approved analytes are listed below:

Polychlorinated Biphenyls

Aroclor 1268 (PCB-1268)	EPA 8082A
Aroclor 1268 (PCB-1268) in Oil	EPA 8082A

Polynuclear Aromatic Hydrocarbons

Acenaphthene	EPA 8270E
Acenaphthylene	EPA 8270E
Anthracene	EPA 8270E
Benzo(a)anthracene	EPA 8270E
Benzo(a)pyrene	EPA 8270E
Benzo(b)fluoranthene	EPA 8270E
Benzo(g,h,i)perylene	EPA 8270E
Benzo(k)fluoranthene	EPA 8270E
Chrysene	EPA 8270E
Dibenzo(a,h)anthracene	EPA 8270E
Fluoranthene	EPA 8270E
Fluorene	EPA 8270E
Indeno(1,2,3-cd)pyrene	EPA 8270E
Naphthalene	EPA 8270E
Phenanthrene	EPA 8270E
Pyrene	EPA 8270E

Priority Pollutant Phenols

2,3,4,6 Tetrachlorophenol	EPA 8270E
2,4,5-Trichlorophenol	EPA 8270E
2,4,6-Trichlorophenol	EPA 8270E
2,4-Dichlorophenol	EPA 8270E
2,4-Dimethylphenol	EPA 8270E
2,4-Dinitrophenol	EPA 8270E

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All approved analytes are listed below:

Priority Pollutant Phenols

2-Chlorophenol	EPA 8270E
2-Methyl-4,6-dinitrophenol	EPA 8270E
2-Methylphenol	EPA 8270E
2-Nitrophenol	EPA 8270E
4-Chloro-3-methylphenol	EPA 8270E
4-Methylphenol	EPA 8270E
4-Nitrophenol	EPA 8270E
Pentachlorophenol	EPA 8270E
Phenol	EPA 8270E

Semi-Volatile Organics

1,1'-Biphenyl	EPA 8270E
1,2-Dichlorobenzene, Semi-volatile	EPA 8270E
1,3-Dichlorobenzene, Semi-volatile	EPA 8270E
1,4-Dichlorobenzene, Semi-volatile	EPA 8270E
2-Methylnaphthalene	EPA 8270E
Acetophenone	EPA 8270E
Benzaldehyde	EPA 8270E
Benzoic Acid	EPA 8270E
Benzyl alcohol	EPA 8270E
Caprolactam	EPA 8270E
Dibenzofuran	EPA 8270E

Volatile Aromatics

1,2,4-Trichlorobenzene, Volatile	EPA 8260D
1,2,4-Trimethylbenzene	EPA 8260D
1,2-Dichlorobenzene	EPA 8260D
1,3,5-Trimethylbenzene	EPA 8260D

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All approved analytes are listed below:

Volatile Aromatics

1,3-Dichlorobenzene	EPA 8260D
1,4-Dichlorobenzene	EPA 8260D
2-Chlorotoluene	EPA 8260D
4-Chlorotoluene	EPA 8260D
Benzene	EPA 8260D
Bromobenzene	EPA 8260D
Chlorobenzene	EPA 8260D
Ethyl benzene	EPA 8260D
Isopropylbenzene	EPA 8260D
m/p-Xylenes	EPA 8260D
Naphthalene, Volatile	EPA 8260D
n-Butylbenzene	EPA 8260D
n-Propylbenzene	EPA 8260D
o-Xylene	EPA 8260D
p-Isopropyltoluene (P-Cymene)	EPA 8260D
sec-Butylbenzene	EPA 8260D
Styrene	EPA 8260D
tert-Butylbenzene	EPA 8260D
Toluene	EPA 8260D
Total Xylenes	EPA 8260D

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 8260D
1,1,1-Trichloroethane	EPA 8260D
1,1,2,2-Tetrachloroethane	EPA 8260D
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260D
1,1,2-Trichloroethane	EPA 8260D
1,1-Dichloroethane	EPA 8260D

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Volatile Halocarbons

1,1-Dichloroethene	EPA 8260D
1,1-Dichloropropene	EPA 8260D
1,2,3-Trichloropropane	EPA 8260D
1,2-Dibromo-3-chloropropane	EPA 8260D
1,2-Dibromoethane	EPA 8260D
1,2-Dichloroethane	EPA 8260D
1,2-Dichloropropane	EPA 8260D
1,3-Dichloropropane	EPA 8260D
2,2-Dichloropropane	EPA 8260D
2-Chloroethylvinyl ether	EPA 8260D
Bromochloromethane	EPA 8260D
Bromodichloromethane	EPA 8260D
Bromoform	EPA 8260D
Bromomethane	EPA 8260D
Carbon tetrachloride	EPA 8260D
Chloroethane	EPA 8260D
Chloroform	EPA 8260D
Chloromethane	EPA 8260D
cis-1,2-Dichloroethene	EPA 8260D
cis-1,3-Dichloropropene	EPA 8260D
Dibromochloromethane	EPA 8260D
Dibromomethane	EPA 8260D
Dichlorodifluoromethane	EPA 8260D
Hexachlorobutadiene, Volatile	EPA 8260D
Methylene chloride	EPA 8260D
Tetrachloroethene	EPA 8260D
trans-1,2-Dichloroethene	EPA 8260D

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Volatile Halocarbons

trans-1,3-Dichloropropene	EPA 8260D
Trichloroethene	EPA 8260D
Trichlorofluoromethane	EPA 8260D
Vinyl chloride	EPA 8260D

Volatile Organics

1,4-Dioxane	EPA 8260D
	EPA 8270E
	EPA 8270E SIM
2-Butanone (Methylethyl ketone)	EPA 8260D
2-Hexanone	EPA 8260D
4-Methyl-2-Pentanone	EPA 8260D
Acetone	EPA 8260D
Carbon Disulfide	EPA 8260D
Cyclohexane	EPA 8260D
Methyl acetate	EPA 8260D
Methyl cyclohexane	EPA 8260D
Methyl tert-butyl ether	EPA 8260D
tert-butyl alcohol	EPA 8260D
Vinyl acetate	EPA 8260D

Sample Preparation Methods

	EPA 5035A-L
	EPA 5035A-H
	EPA 3580A
	EPA 3010A
	EPA 3050B
	EPA 3550C

Serial No.: 71954

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2027
Issued April 01, 2026

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. SCOTT HALL
ALS ENVIRONMENTAL - STRATFORD
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Sample Preparation Methods

EPA 3546

EPA 3060A

EPA 9010C

Serial No.: 71954

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APPENDIX H:
SCOPE OF WORK DRAWINGS

See Drawings

APPENDIX I:
PHOTOGRAFIC DOCUMENTATION

PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
1	March 25, 2026

Area B (Central Building)

Typical/Throughout

Confirmed Asbestos-Containing Wall Plaster, Brown Coat & Contaminated ACM White Coat



Photo No.	**Date**
2	March 27, 2026

Area B (Central Building)

Typical/Throughout

Confirmed Asbestos-Containing Ceiling Plaster, Brown Coat & Contaminated ACM White Coat



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
3	March 25, 2026

Area B (Central Building)

Basement, Storage 010

Confirmed Asbestos-Containing Ceiling Cement Coating, Gray



Photo No.	**Date**
4	May 07, 2026

Area B (Central Building)

Basement, Bathrooms (Typ.)

Confirmed Asbestos-Containing Ceiling Plaster, Brown Coat & Contaminated White Coat; Confirmed Asbestos-Containing Wall Plaster, Brown Coat & Contaminated White Coat; Contaminated ACM Ceramic Wall Tiles; Ceramic Wall Tile Backing, Gray; Ceramic Wall Tile Grout, White; Assumed Asbestos-Containing Concealed Waterproofing Barrier Under Bathroom Floor



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
5	May 07, 2026

Area B (Central Building)

Basement, Classroom 014 (Kindergarten)

Asbestos-Containing 9”x 9” Floor Tile, Green & associated Mastic, Black (inside of Casework & Cabinets) – ACM per 2025 AHERA



Photo No.	**Date**
6	May 07, 2026

Areas A, B & C

Classrooms & Offices (Typ.)

Assumed Asbestos-Containing Concealed Felt Paper Under Wood Floor; Non-Suspect Material Wood Floor & Wood Baseboard



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
7	May 07, 2026

Area A

Nurse's Office 001

Asbestos-Containing Bottom Layer 9"x 9" Floor Tile, Green & associated Mastic, Black; Contaminated ACM Top Layer 12"x 12" Floor Tile Blue, & associated Mastic, Black

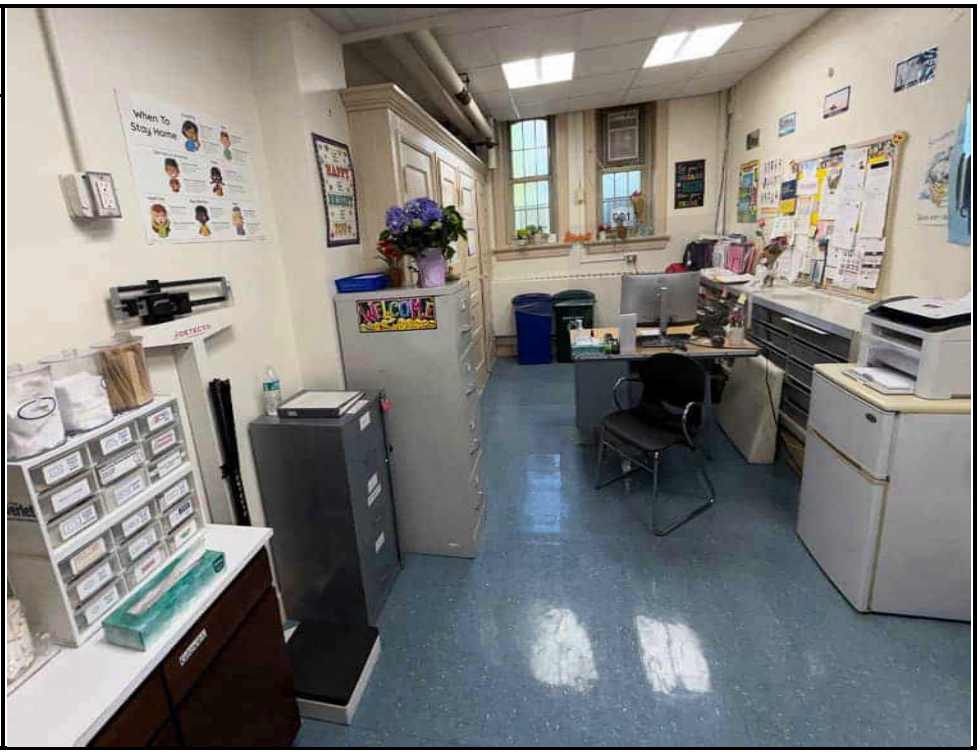
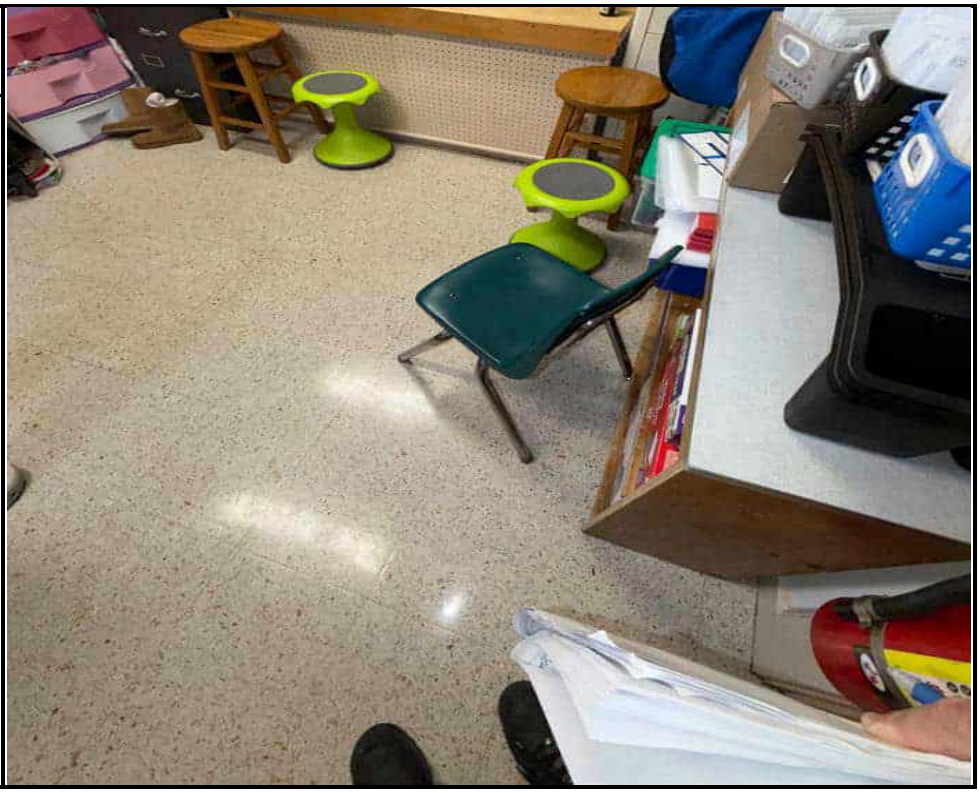


Photo No.	**Date**
8	May 07, 2026

Area A

Basement, Classroom 002 (Kindergarten) Vestibule & Closet

Asbestos-Containing Bottom Layer 9"x 9" Floor Tile, Green & associated Mastic, Black; Contaminated ACM Top Layer 12"x 12" Floor Tile, Beige Marbled & associated Glue



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
9	May 05, 2026

Areas A, B & C

Exterior (Typ.)

Confirmed Asbestos-Containing Exterior Door/Window/Louver Frame Caulking, White/Gray



Photo No.	**Date**
10	May 07, 2026

Areas C

Basement, Boiler Room

Assumed Asbestos-Containing Vapor Diffusion Retarder Under Slab/Soft Concrete Filler



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
11	May 07, 2026

Area A

1st Floor, Library 109 & Corridor

Confirmed Asbestos-Containing 9”x 9” Floor Tile, Yellow & associated Mastic, Black; Contaminated ACM Plywood Subflooring; Middle Layer 12”x 12” Floor Tile, Blue & associated Mastic, Black; Top Layer 12”x 12” Floor Tile, White Marbled/Blue & associated Glue, Gray

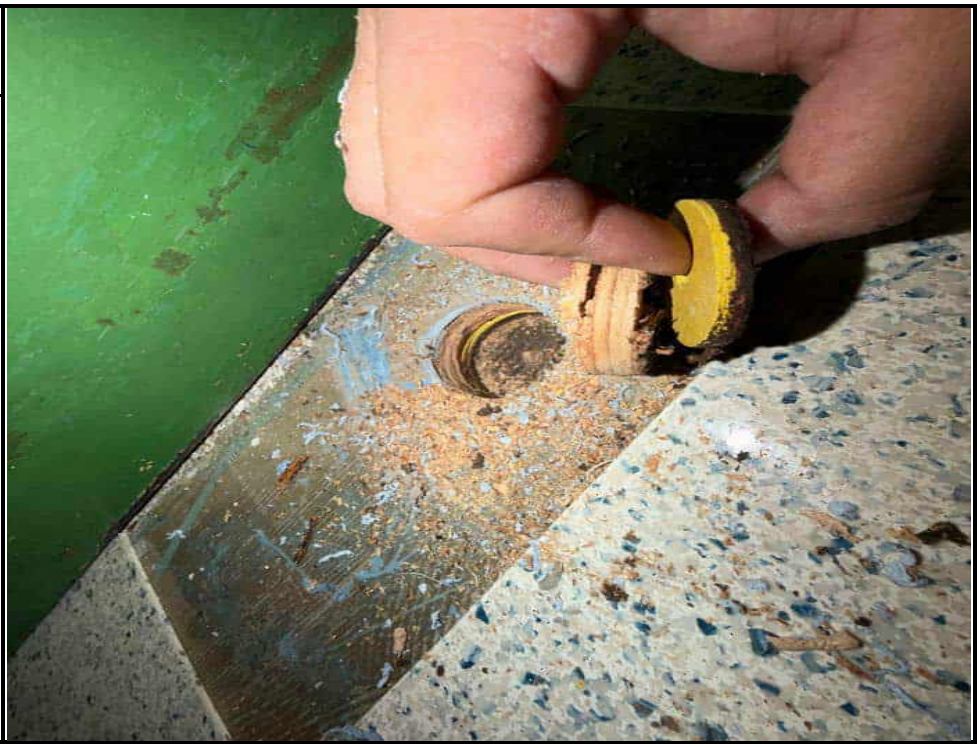


Photo No.	**Date**
12 & 13	May 06, 2026

Area A

2nd Floor, Bathroom 209
1st Floor, Bathroom 107

Confirmed Vermiculite-Containing Wall Tile Backing, Gray & Contaminated Vermiculite Ceramic Wall Tile; Ceramic Wall Tile Grout, White; Assumed Asbestos-Containing Waterproofing Under Bathroom Floor





PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
14	May 06, 2026

Area C

1st Floor, Gym/Cafeteria/Auditorium

Confirmed Asbestos-Containing Concealed Corrugated Radiator Insulation, White/Gray



Photo No.	**Date**
15	May 05, 2026

Area B

Attic (Typ.)

Exposed Ceiling Plaster, Brown Coat (From Floor Below), under Non-Suspect Fiberglass Attic Insulation



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
16	May 05, 2026

Area A

1st Floor Hallway

Lead Based Paint on Plaster Walls and Black Plaster Cove Base – Typical Throughout Wing

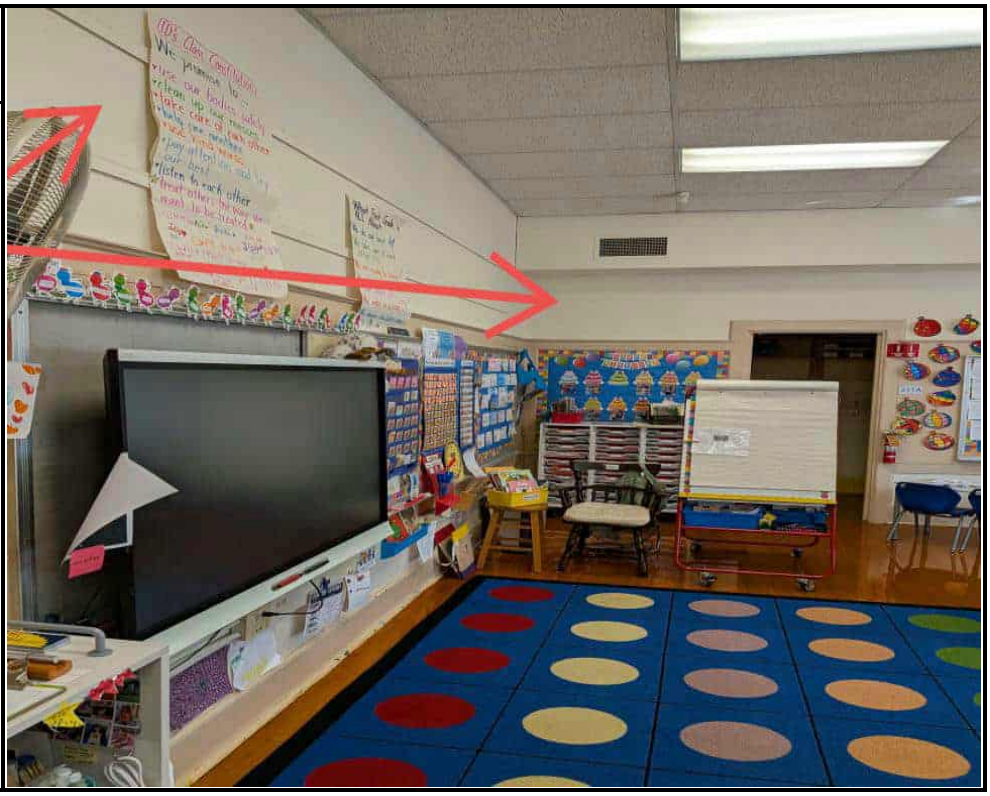


Photo No.	**Date**
17	May 05, 2026

Area A

Classroom 211

Lead Based Paint on Plaster Walls– Typical Throughout Wing



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
18	May 05, 2026

Area B

2nd Floor Hallway

Lead Based Paint on Plaster Walls– Typical Throughout Wing

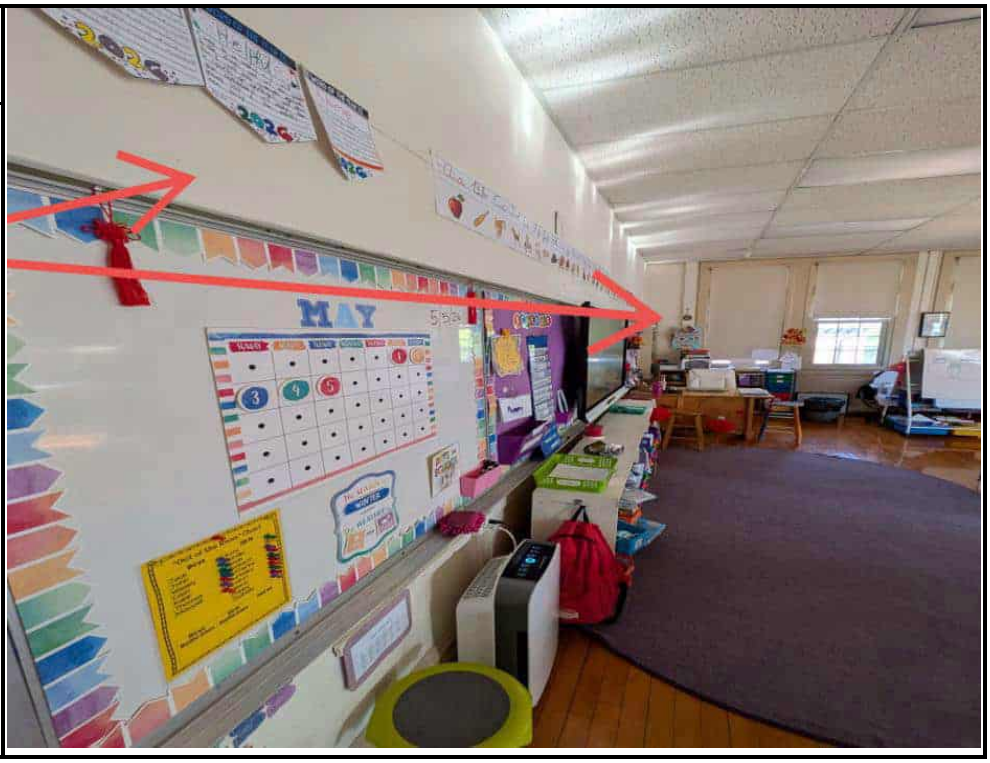


Photo No.	**Date**
19	May 05, 2026

Area B

Classroom 203

Lead Based Paint on Plaster Walls– Typical Throughout Wing



PHOTOGRAPHIC LOG		
Pelham Public Schools District	**Siwanoy Elementary School Additions and Alternations**	**US0044021.1475**

Photo No.	**Date**
20	May 05, 2026

Area C

Ground Floor Hallway
Lead Based Paint on Plaster Walls and Black Plaster Cove Base– Typical Throughout Wing

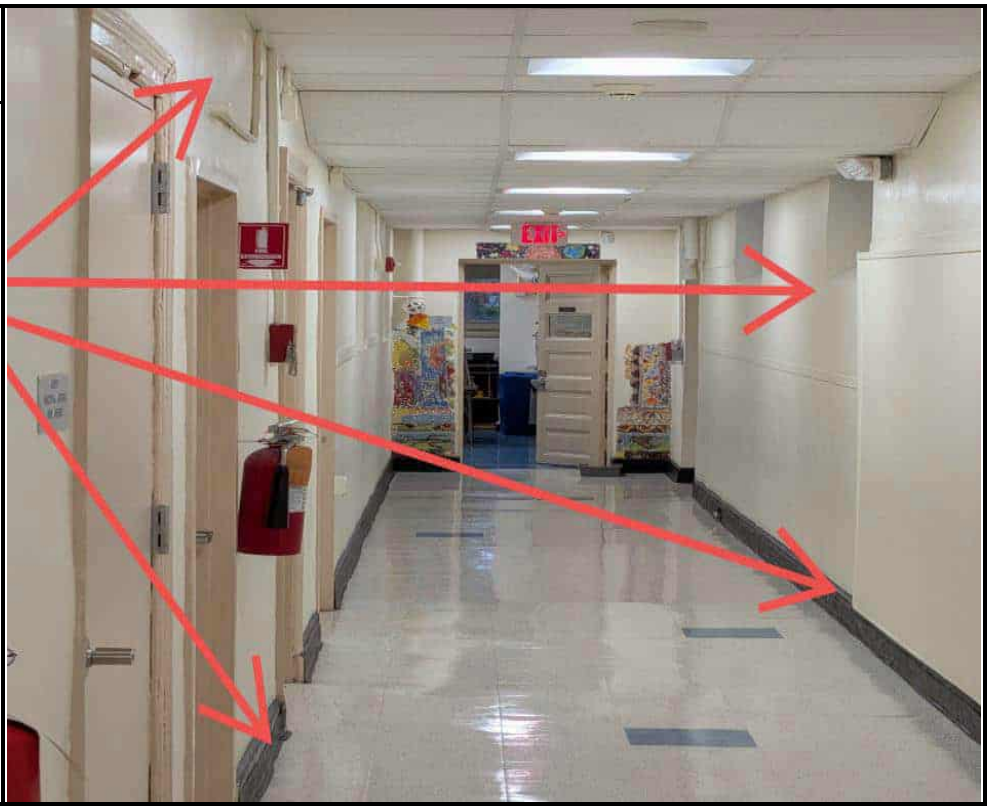
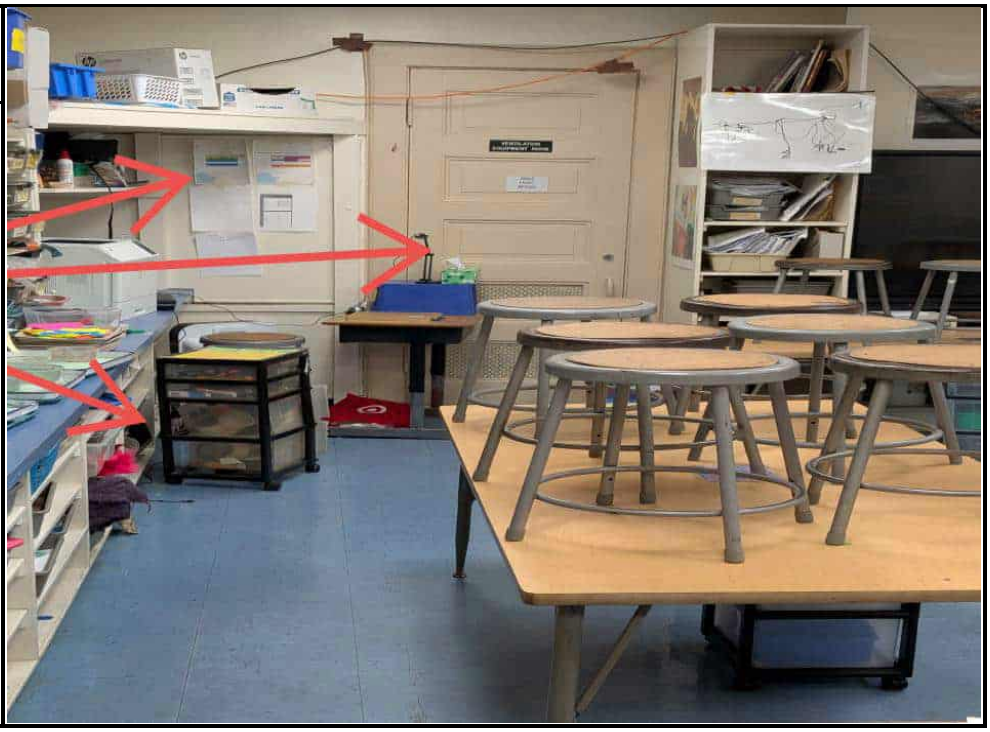


Photo No.	**Date**
21	May 05, 2026

Area C

Art Room 006
Lead Based Paint on Plaster Walls, Doors and Cabinets– Typical Throughout Wing



APPENDIX J:
PREVIOUS SAMPLING DATA

N/A

GEO DESIGN

GEODesign, Inc.
307 W 38th St #1414
New York, NY 10018
(203) 758-8836

March 23, 2026
File No. 5022-003.00

Sarah Davis AIA
KG+D Architects, PC
285 Main Street
Mount Kisco, NY 10549

Email: sdavis@kgdarchitects.com

Re: Geotechnical Report
Siwanoy Elementary School
489 Siwanoy Place
Pelham, New York

Dear Sarah:

GEODesign, Inc. (d/b/a GEODesign, Inc. P.C.; GEODesign) is pleased to submit our geotechnical engineering report for the proposed improvements planned at the Siwanoy Elementary School's campus in Pelham, New York. The general site location is depicted on Figure 1 in Appendix 1.

SUMMARY

GEODesign performed a subsurface exploration program and geotechnical engineering evaluation for the proposed improvements. Our services included subsurface explorations consisting of Standard Penetration Test (SPT) borings, test pits, and borehole infiltration testing; geotechnical engineering analyses; limited laboratory testing; and the preparation of this report. Our services were provided in general accordance with our proposal last revised December 2, 2025.

Our recommendations are based in part on guidance from the 2024 International Building Code (IBC) and the 2025 Building Code of New York State.

PROJECT UNDERSTANDING

Figure 2 in Appendix 1 shows general site features and proposed improvements.

Our understanding of the project site is based on information provided by the project team and a review of:

- The *Required Geotechnical Information for the Capital Project* document dated November 10, 2025 and prepared by The LA Group. This document includes two site plans that show the locations of the proposed improvements and requested boring and test pit locations. This document also includes requirements for the geotechnical exploration.

- The *Boundary & Topographic Survey* plan, dated October 14, 2025 and prepared by Gallas Surveying Group. This plan shows existing conditions, topography, and subsurface utilities present on site.

- A draft version of the *Grading and Drainage Plan*, dated February 20, 2026 and prepared by KG+D Architects, PC. This plan shows existing site grades and conditions as well as the proposed improvements.

- A sketch provided by KG+D Architects, PC via email on March 16, 2026 depicting the approximate locations/limits of proposed pedestrian-, light-, and heavy-duty pavements.

EXISTING CONDITIONS

The project site is bordered by Siwanoy Place to the northeast, residential properties to the northwest, and Manor Lane to the southwest. Within this report, the terms "site" and "project site" refer only to the areas of the proposed additions and SWM facilities.

The existing school building is located in the central portion of the site and consists of a central structure with two "wings". The building incorporates three levels; portions of the lowest level are below grade. Pavements, landscaped areas, subsurface utilities, and playground equipment are present along the perimeter of the building.

Topographically, the site is characterized as gently to moderately sloping. Site grades generally slope down in an approximately northerly to northeasterly direction. Existing site grades range from approximately Elevation (El.) 48 in the southwestern portion of the site, adjacent to Manor Lane, to approximately El. 28 in the northern portion, adjacent to Siwanoy Place.

Ground surface elevations in this report are presented in feet and are referenced to the North American Vertical Datum of 1988 (NAVD88), based on the available plans.

PROPOSED IMPROVEMENTS

The proposed improvements include the following:

- Two building additions planned along the southwestern face of the existing building. One building addition, referenced herein as Addition 1, is planned to include classroom space and an elevator. The second addition, referenced herein as Addition 2, will include an elevator and entryway.

  The lower-level slab of Addition 1 is planned at approximately El. 32, and will roughly match the lower-level floor elevation of the adjacent, existing structure. Information regarding the lower-level floor elevation of Addition 2 was not available at the time this report was prepared. However, we anticipate that it will roughly match the lower-level

floor of the adjacent, existing school building, depicted on the available plans at approximately El. 43.

- Proposed pavements, consisting of a combination of pedestrian-, light-, and heavy-duty pavements. The pedestrian-duty pavements are planned to include a combination of asphalt and concrete pavement sections. The proposed light- and heavy-duty pavements are planned to incorporate asphalt pavement sections. We assume that the proposed pavements will be constructed at or near existing grades.

- Stormwater management (SWM) improvements. We understand that the SWM facilities will consist of one underground detention system and permeable pavers planned in two playground areas. The SWM facilities are planned to incorporate infiltration techniques, if feasible based on subsurface conditions. Based on infiltration test depths requested by the project team, we infer that SWM facility inverts are planned approximately 2 to 5 feet below existing grades.

- Four retaining walls. The retaining walls are planned to have lengths ranging from approximately 37 to 134 feet and maximum exposed heights ranging from approximately 2 to 4 feet.

SUBSURFACE EXPLORATIONS

GEODesign completed a subsurface exploration program consisting of seven test borings (referenced as Borings B-1 through B-5 and SB-1 and SB-2), three borehole infiltration tests, and four test pits (referenced as Test Pits TP-1 through TP-4). Refer to Figure 2 in Appendix 1 for exploration locations.

The B-series borings were performed to support pavement and SWM design. Dynamic Cone Penetrometer (DCP) testing was performed in the B-series borings to depths of approximately 24 to 34 inches below surface to support pavement design. Borings SB-1 and SB-2 as well as Test Pit TP-1 were performed within the approximate footprint of proposed Addition 1.

Test pits TP-2 through TP-4 were performed in an attempt to expose the existing building foundations near its interface with Addition 1, though TP-4 was the only pit successful in exposing existing foundations.

Due to access constraints (i.e., metal gates and stairs), it was not possible to perform requested subsurface explorations within the footprint of Addition 2.

GEODesign engineering staff marked the exploration locations in the field using tape measurements from existing site features. Existing ground surface elevations at the exploration locations were interpolated from the topographic contour lines shown on the available plans. The locations of the explorations and their elevations are approximate.

Further discussion of the subsurface explorations is presented below.

Test Borings

The test borings were drilled by Core Down Drilling, LLC on January 16 and 17, 2026. Boring locations are shown on Figure 2 in Appendix 1, and boring logs are included in Appendix 2.

The borings were advanced using hollow-stem-auger drilling methods to approximately 10 to 30 feet below existing site grades.

Representative soil samples were obtained from the borings by split-barrel sampling procedures in general accordance with ASTM Specification D-1586. The split-barrel sampling procedure utilizes a standard 2-inch outer diameter (1⅜-inch I.D.) split-barrel sampler that is driven into the bottom of the boring with a 140-pound hammer falling 30 inches. The number of blows required to advance the sampler between 6 and 18 inches of penetration is recorded as the Standard Penetration Resistance Value (N) in blows per foot (bpf). The blows (i.e., the "N" values) are indicated on the boring logs at their depth of occurrence and provide an indication of the relative density of the material.

Rock coring was performed in one boring (Boring SB-2) from 11 to 18 feet below grade using a 5-foot-long NQ (1⅞ in. I.D.) core barrel to verify the presence of rock and to assess its quality, as indicated by core recovery and rock quality designation (RQD). RQD is defined as the combined length of pieces of the core sample greater than 4 inches in length divided by the total core length.

Groundwater levels during drilling were inferred based on visual observation of soil samples. Groundwater levels on completion of drilling were measured using an electronic water level indicator inside the hollow-stem augers.

Dynamic Cone Penetrometer Testing

GEODesign performed five Dynamic Cone Penetrometer (DCP) tests in selected borings to evaluate the resilient modulus of in-place subgrade soils. The DCP tests are referenced as Tests DCP-1 through DCP-5,

The DCP testing procedure involves driving a hardened steel cone into the subgrade with a 17.6-pound hammer falling a distance of 22.6 inches. The penetration of the cone into the subgrade per blow is measured in inches and provides an indication of the soil strength characteristics.

The DCP tests were advanced until the maximum available stroke of the DCP was reached or refusal was encountered (defined as less than 2mm/blow). DCP logs and plots of the DCP penetration index (i.e. depth of penetration per blow) are included in Appendix 3. Appendix 3 also includes calculated resilient modulus plotted verses depth. The resilient modulus shown on the plots was estimated based on published correlations.

Borehole Infiltration Testing

Borehole infiltration testing was performed at offset locations adjacent to Borings B-1, B-2, B-4, and B-5. The infiltration tests were performed in general accordance with the *New York State Stormwater Design Manual* and consisted of measuring the drop in water within 4-inch diameter plastic pipes installed at depths selected by the project team, adjusted as necessary based on conditions observed during drilling, following a 24-hour presoak period. The results of the infiltration testing are presented on the boring logs included in Appendix 2 and are discussed in the *Subsurface Conditions* section of this report.

Test Pits

The test pits were performed by JCM Services, Inc. on January 19, 2026 to explore the configuration of the existing building foundations and support characteristics of the subgrade materials.

The test pits were excavated using a CAT 303.5E excavator. The test pits were advanced to depths ranging of approximately 7 to 12 feet beneath existing grades. Approximate test pit locations are shown on Figure 2 in Appendix 1. Test pit logs and a photolog depicting the test pit results are included in Appendices 4 and 5, respectively.

LABORATORY TESTING

Representative soil samples collected during our subsurface exploration were subjected to index testing in our in-house geotechnical laboratory and a subcontracted laboratory to verify the field classifications and assist in engineering evaluations. Laboratory testing consisted of natural moisture content, grain size, and hydrometer testing.

The results of the laboratory testing are included in Appendix 6.

SUBSURFACE CONDITIONS

Geology

In conjunction with our subsurface exploration, we reviewed published geological data of the site vicinity (the "Surficial Geologic Map of New York – Lower Hudson Sheet," Donald H. Caldwell (ed.), 1989 (map scale: 1:250,000) and the "Geologic Map of New York – Lower Hudson Sheet," Donald W. Fisher et al., 1970 (map scale: 1:250,000)).

The site is mapped in Till, which consists of a heterogenous blend of sand, silt, clay, cobbles, and boulders deposited beneath glacier ice.

The underlying bedrock is mapped as schist and amphibolite of the Hartland Formation. Relatively shallow bedrock (i.e., locally outcropping or within approximately 3 feet of surface grades) is mapped in the site vicinity.

General Subsurface Profile

The subsurface conditions were generally consistent with those anticipated based on the preceding description of the local geology and the developed condition of the site, with the exception that natural sands and gravel were encountered instead of till.

The generalized subsurface profile, as inferred from the subsurface explorations, consists of topsoil or asphalt/subbase underlain by fill, sand and gravel, and decomposed to relatively intact bedrock. A brief description of the subsurface conditions encountered by the explorations is presented in the following paragraphs.

Topsoil was encountered at the ground surface in Borings B-4 and B-5 and in Test Pit TP-4 and was approximately 2 to 3 inches thick.

Asphalt was encountered at the ground surface by the remaining explorations and was approximately 1 to 9 inches thick.

Subbase was encountered below the asphalt in Borings B-1 through B-3 and Test Pit TP-2. Subbase thickness ranged from approximately 1 to 4 inches. The remaining explorations did not encounter a discernable subbase layer.

Surficial material thicknesses are summarized in the following table.

Exploration	Asphalt Thickness (in.)	Subbase Thickness (in.)	Topsoil Thickness (in.)
Boring B-1	1	4	--
Boring B-2	6	1	--
Boring B-3	6	1	--
Boring B-4	--	--	3
Boring B-5	--	--	3
Boring SB-1	5	--	--
Boring SB-2	3	--	--
Test Pit TP-1	4.5	--	--
Test Pit TP-2	4	3	--
Test Pit TP-3	5-9	--	--
Test Pit TP-4	--	--	2

Fill was encountered beneath the surficial materials, extending to depths of approximately 1 to 12 feet beneath existing grades. Note that fill was encountered to the termination depths of Boring B-15 and Test Pit TP-2 and may extend to greater depths than explored at these locations.

The fill consisted of a heterogenous blend of brown, light brown, dark brown, gray-brown, or gray fine to coarse sand and fine to coarse gravel with subordinate proportions of silt. The fill frequently contained minor proportions of foreign debris, including plastic scrap and root, wood, concrete, brick, and asphalt fragments. Additionally, Test Pit TP-3 encountered a concrete slab, or remnant thereof, within the fill stratum at a depth of approximately 3.5 feet below existing grades.

SPT N-values in the fill were highly erratic ranging from 3 to 36 blows per foot (bpf), the fill is inferred to be very loose to dense

Sand and Gravel was encountered beneath the fill in the majority of the explorations and extended to depths ranging from approximately 7 to 14 feet beneath existing grades. These soils were encountered to the termination depths of Boring B-4 and Test Pits TP-3 and TP-4.

SPT N-values for these soils ranged from 5 to 46 bpf, indicating loose to dense soil conditions. Typical SPT N-values ranged from 7 to 19 bpf, indicating loose to medium dense soil conditions. These soils were visually classified as light brown, orangish brown, brown, or gray; fine to coarse sand; trace to and fine to coarse gravel; trace to some silt, or less commonly, brown, light gray, or gray; fine to coarse gravel; little to some fine to coarse sand; trace to little silt.

Decomposed Bedrock was encountered beneath the sand and gravel in Borings B-1 through B-3, SB-1, and SB-2 and extended to depths ranging from approximately 10 to 30 feet below existing grades. These soils were encountered to the termination depths of Borings B-1 through B-3 and SB-1 and may extend to greater depths than explored at these locations.

The decomposed bedrock is inferred to be dense to very dense based on SPT N-values ranging from 35 bpf to 50 blows over 3 inches of penetration.

SPT sampling tends to pulverize decomposed bedrock. As such, these soils were visually classified as of a blend of gray sand and gravel, with minor proportions of silt.

Bedrock core was collected in Boring SB-2 at a depth of approximately 11 feet beneath existing grades. Based on RQD values of 50 and 70 percent, rock quality is inferred to be poor to fair. The bedrock was visually classified as moderately hard, slightly to moderately weathered, dark gray to gray, fine- to coarse-grained gneiss.

Additionally, Test Pit TP-1 encountered bucket refusal at a depth of approximately 7 feet beneath existing grade on relatively intact bedrock.

Groundwater was observed in Borings B-1, B-2, B-4, and B-5 at depths ranging from approximately 8 to 11 feet beneath existing grades. The remaining borings and the test pits did not encounter water to the depths explored. Note that groundwater depths will vary in response to seasonal variations in precipitation and may be impacted by construction activity or other factors.

Existing Building Foundations

Test Pits TP-2 through TP-4 were performed to expose and explore subsurface conditions near the existing school building foundations. The foundation walls of the school building were observed to consist of cast-in-place concrete.

The configuration of the existing building foundations, as observed in the test pits, is summarized below:

Test Pit No.	Existing Footing Exposed by Test Pit (Y/N)	Depth to Bottom of Footing Below Grade (ft.)	Approximate Footing Dimensions (ft.)	
			Thickness	Horizontal Projection from Foundation Wall
TP-2	No	>12	--	--
TP-3	No	>8	--	--
TP-4	Yes	10	2	1

Infiltration Test Results

Infiltration testing was performed at offset locations adjacent to boreholes selected by the project team. Infiltration testing was performed at depths selected by the project team in general compliance with procedures outlined in the *New York State Stormwater Management Design Manual*.

The results of the infiltration testing are included on the boring logs in Appendix 2 and summarized in the following table:

Boring	Existing Grade[1] (ft.)	Infiltration Test Depth		Stratum	Stabilized Infiltration Rate (in./hr.)
		(ft.)	(El.)		
B-1	42	2	40	Sand and Gravel	6.23
B-2	46	2	44	Sand and Gravel	3.94
B-4	32	6	26	Fill	0.54
B-5	30.5	5	25.5	Fill	4.13

Note:
[1]Existing grades at infiltration test locations were interpolated from the topographic contours shown on the available plans and are approximate.

GEOTECHNICAL RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

Due to access constraints, it was not possible to perform exploratory borings or test pits for Addition 2. While we anticipate the foundation recommendations provided herein will be applicable to Addition 2, this must be confirmed by additional explorations (i.e., test borings and/or test pits) prior to construction of foundations for Addition 2.

Foundation Recommendations

The results of the explorations performed within the footprint of proposed Addition 1 indicate that variable subsurface conditions (i.e., natural sand and gravel, relatively intact to decomposed bedrock, and existing fill) will be encountered at footing subgrade elevations. Specific measures will be required for different conditions, as discussed below.

Foundation Bearing Pressures and Depth

The natural sand and gravel, decomposed bedrock, and intact bedrock are all suitable for direct foundation support. We recommend footings be proportioned for a net allowable bearing pressure of 4,000 pounds per square foot (psf). Footing widths should be no less than 30 inches for column footings and 24 inches for strip footings. We anticipate that footings designed for the above bearing pressure will experience less than 1 inch total and ½ differential settlement. Settlement is expected to occur during construction.

Exterior footings (and footings in areas otherwise subjected to freezing temperatures) bearing on soil (i.e., Structural Fill or decomposed bedrock) must be embedded at least 4 feet below grade consistent with building code frost protection requirements. Interior footings in heated areas shall bear no less than 18 inches below the top of the finished slab.

The above minimum embedment depths do not apply to footings bearing directly on relatively intact bedrock.

The bearing elevations of the proposed additions' foundations should match those of the adjacent building foundations. The intent of this recommendation is to minimize the potential for structural loads of the additions impacting the existing building foundations.

Foundation Subgrade Preparation Requirements

Natural Sand and Gravel & Decomposed Bedrock are suitable for direct foundation support without improvement. Final excavation to footing subgrades in these materials should be performed using a smooth-edged bucket to minimize subgrade disturbance and be proof compacted under the observation of GEODesign prior to pouring footings.

Intact Bedrock is anticipated to be present at footing subgrade elevations in localized areas (i.e., near Test Pit TP-1). Where footings are supported on bedrock, any loose, highly jointed/fractured,

or otherwise unsuitable bedrock should be removed. GEODesign should review footing subgrades consisting of bedrock to assess bedrock competence and evaluate the potential need for additional rock removal to create a suitable bedrock subgrade.

Bedrock subgrade surfaces having an average slope greater than 10 percent across the width of the footing in any direction must be leveled. Leveling shall be accomplished by additional rock removal with mechanical means (i.e., hoe-ramming) or backfilling to the maximum required slope with lean concrete with a 28-day compressive strength of 2,000 psi. Alternatively, it is acceptable to install dowels into the rock in lieu of leveling the subgrade by mechanical means. In our experience, 30-inch-long Grade 60 No. 8 size reinforcing dowel bars drilled at least 12 inches into the rock subgrade is sufficient, but we recommend the Structural Engineer review this option and specify the number of bars required based on the measured slope of the rock subgrade if this alternative is pursued.

Column footings where bedrock is encountered under a portion of the footing only should be over excavated so that the entire bearing surface below the column footing resides in bedrock.

Where continuous strip footings transition from intact bedrock to natural sand and gravel or decomposed bedrock, we recommend preparing a transition zone over a 10-foot length where the bedrock is removed at an approximately 4H:1V slope to facilitate placement of a minimum 1-foot thickness of Structural Fill between the intact bedrock subgrade and the bottom of footing. A conceptual section view of the transition zone is included as Figure 4 in Appendix 1.

Nonengineered Fill Removal

Limited thickness of existing nonengineered fill is anticipated at or below footing subgrade elevations in localized areas in the northern portion of the proposed addition (i.e., near Boring SB-2). The existing fill is not suitable for direct foundation support and should be completely removed and replaced with compacted Structural Fill (refer to Appendix 7 for requirements) from below footing and outward from the footing on a one-to-one downward slope beginning 1 foot outside of the exterior edge of footing down to natural bearing soils. This will form a truncated pyramid of structural fill support below the footings.

Alternatively, in areas where fill is present at footing subgrade elevations, it would be feasible to lower the footings to bear on the underlying natural sand and gravel or decomposed to relatively intact bedrock.

Slabs

We assume that the concrete slabs will be constructed as conventional slabs on grade. The slabs should be constructed on minimum 6-inch layers of freshly placed imported Crushed Stone bearing on the firm natural soils or compacted Structural Fill. The Crushed Stone should be proof compacted with a vibratory plate or roller compactor immediately before final preparations for concrete placement.

A subgrade modulus of 200 pounds per cubic inch (pci) may be assumed for slab design, provided the minimum 6-inch Crushed Stone base course is provided and proof compacted as recommended.

Polyethylene vapor barriers should be provided beneath the slabs to interrupt the rise of capillary moisture in accordance with building code requirements. Seams should be lapped and sealed in accordance with the manufacturer's recommendations.

Rock Removal

Based on the results of the exploration, bedrock above foundation levels is expected to be encountered in localized areas during foundation excavation. We anticipate that mechanical methods (i.e., hoe ramming or ripping) will be appropriate to remove rock where encountered down to foundation levels. Given the proximity of the existing building to the proposed additions, blasting is not appropriate for this site.

Vibration monitoring should be performed during rock removal. A peak particle velocity threshold of 0.2 inches per second should be utilized. GEODesign can perform vibration monitoring on request.

Earthquake Design

The project site is considered Site Class "D" (stiff soil) in accordance with the procedures outlined in ASCE 7-22, Chapter 20.

We do not consider site soils subject to liquefaction.

Design for Lateral Load

Walls subject to unbalanced earth pressures (such as below-grade foundation walls, site retaining walls, etc.) should be designed using the following parameters:

Parameter	Value[1]
Equivalent Fluid Pressure (Active Case)	40 psf
Equivalent Fluid Pressure (At-Rest Case)	60 psf
Unit Weight γ	125 pcf
Friction Angle Φ	32°
Active Earth Pressure Coefficient K_a	0.31
At-Rest Earth Pressure Coefficient K_0	0.47

[1]Abbreviations: pounds per square foot (psf), pounds per cubic foot (pcf).

The above parameters assume that materials meeting the requirements of Structural Fill or Select Fill, per Appendix 7, will be used as wall backfill.

The above recommendations are presented based on the assumption that the proposed walls will not be subjected to hydrostatic pressures and the backfill geometry is horizontal. To achieve this condition, free-draining backfill must be used for wall backfill. Standard gravity foundation drains are also recommended.

Walls subject to surcharge loads must also be designed for an additional uniform lateral pressure over the entire height of the wall equal to the applicable earth pressure coefficient (active or at-rest case, as applicable) times the magnitude of the surcharge.

Proposed Pavements – Light- and Heavy-Duty Sections

The pavement sections (i.e., combined thickness of asphalt/concrete, processed aggregate base, and subbase) should be placed on firm natural sands or carefully prepared Select Fill.

Any fill present at pavement subgrade elevations should be overexcavated to a minimum depth of 2 feet below pavement subgrade elevation. The resulting subgrade should be proof-compacted using a minimum 5-ton vibratory smooth-drum roller under the observation of GEODesign. Soils which are observed to be soft/loose, unstable during proof-compaction, or otherwise unsuitable should be overexcavated to a stable bearing stratum and replaced with compacted Select Fill.

We recommend the following minimum pavement sections for the proposed light- and heavy-duty pavements:

Course/Layer	Thickness (in.)	
	Light-Duty	Heavy-Duty
Surface	1	1.5
Intermediate	--	1.5
Base	2	2.5
Subbase (refer to Appendix 7)	15	15

The above pavement sections are based on a seasonally adjusted resilient modulus value of 3,300 psi, based on the results of the DCP testing. This roughly corresponds to a "Poor" subgrade quality for Region II (the site location) per Table 4.2 of the *AASHTO Guide for Design of Pavement Structures*.

Traffic counts were estimated based on published trip counts for academic institutions.

The above pavement sections are conservative and could potentially be improved based on additional explorations (e.g., in the area of the proposed heavy-duty pavements) and/or project-specific traffic counts provided by the project team.

Proposed Pedestrian-Duty Pavements

Concrete and asphalt sidewalks should incorporate the following pavement sections:

Sidewalk Material	Minimum Thickness (in.)	Crushed Stone Thickness (in.)
Concrete	5	6
Asphalt	2	6

Crushed Stone should consist of materials meeting the requirements included in Appendix 7.

Concrete for sidewalks should have a minimum compressive strength of 4,000 psi. Reinforcement should consist of 6-inch by 6-inch welded wire mesh.

Any topsoil or other deleterious materials present below proposed sidewalks should be removed. Sidewalk subgrades should be proof-compacted as discussed in the preceding section. Materials observed to unstable during proof compaction or otherwise unsuitable should be overexcavated and replaced with compacted Select Fill.

Excavation

The on-site fill and natural soils are considered to be Type "C" soils per the Occupational Safety and Health Administration (OSHA) standards. As such, temporary excavations should be sloped at 1.5H:1V when seepage is not present.

Given the results of the explorations, we do not anticipate that groundwater will significantly impact the proposed construction. However, due to the presence of relatively shallow bedrock, perched water conditions are likely. Moreover, some seepage of perched water from excavation slopes may occur. We anticipate that conventional dewatering techniques (i.e., diversion trenches, sumps, etc.) will be adequate for construction dewatering.

Excavations should be protected from precipitation and run-off of surface drainage.

Fill and Backfill

Fill and backfill should meet the requirements and be subjected to the compactive effort specified in Appendix 7.

Based on the results of the explorations, we anticipate that the existing fill and natural sand will be appropriate for reuse as Structural Fill. However, the existing fill contains minor proportions of foreign debris. Foreign debris, organics, and other deleterious materials must be segregated and removed from any soil planned for reuse.

The on-site soils will not be suitable for reuse as Select Fill.

Laboratory testing (sieve analysis) should be performed on representative samples of any materials planned for reuse to confirm their suitability.

CONSTRUCTION DOCUMENTS AND SPECIAL INSPECTIONS

GEODesign remains available to collaborate with the design team to finalize design details and address geotechnical related issues that arise during design development. GEODesign's involvement is recommended in regard to preparation of project technical specifications for earthwork, and review of construction drawings and related technical specification sections prepared by other design team members.

Consistent with building code requirements, placement of structural fill supporting building foundations and preparation of footing subgrades are subject to "special inspection" requirements. The geotechnical Special Inspector must review excavated subgrades for foundations and slabs and determine any requirements for additional excavation and replacement of unsuitable material. We recommend GEODesign serve as the Special Inspector given our familiarity with the site conditions.

Our recommendations are predicated on our involvement to allow evaluation of actual conditions exposed during construction to address variations versus anticipated conditions and to allow prompt response for any necessary modifications.

ADDITIONAL WORK

Additional explorations will be required for proposed Addition 2. If soil borings are planned, a limited-access drill rig will be required. We anticipate that test pits performed using a relatively small mini-excavator would also be feasible.

This report and GEODesign's services are subject to the limitations outlined in Appendix 8.

GEODesign, Inc., P.C.

T. Coville

Tim Coville, P.E.
Senior Project Engineer

Jacob F. Wimett
Principal

m:\cl\5022 kg+d architects, pc\003 siwanoy elementary school\05 report\5022-003 geotechnical report.docx

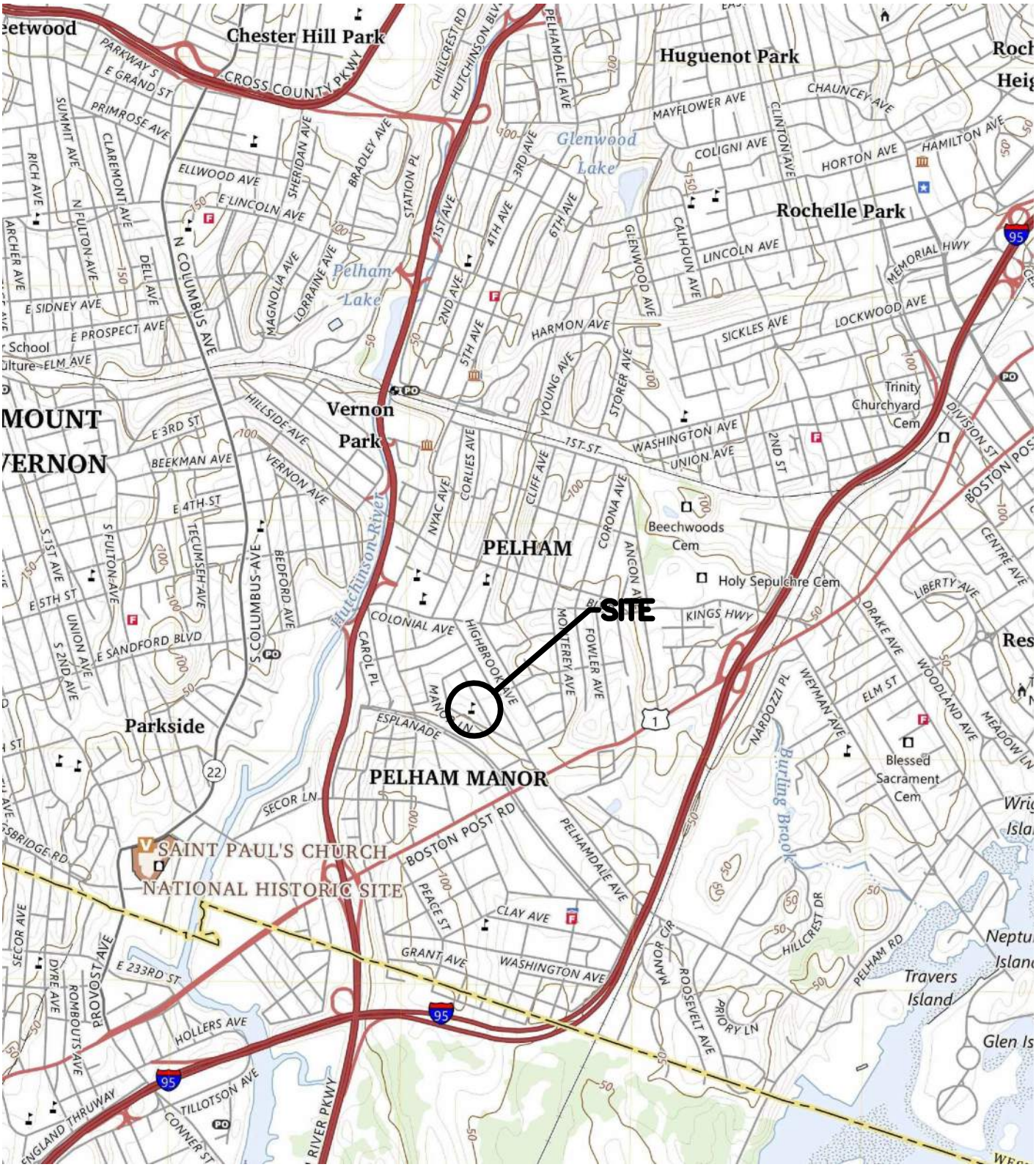
Attachments:

Appendix 1 – Figures
Appendix 2 – Test Boring Logs
Appendix 3 – DCP Logs and Plots
Appendix 4 – Test Pit Logs
Appendix 5 – Test Pit Photolog
Appendix 6 – Laboratory Test Results
Appendix 7 – Material Gradation and Compaction Criteria
Appendix 8 – Limitations

GEO DESIGN

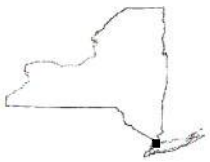
Appendix 1

Figures



GEO DESIGN
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307 WEST 38TH STREET, #1414
NEW YORK, NY 10018
212.221.6651
geocompanies.com

NEW YORK



QUADRANGLE LOCATION

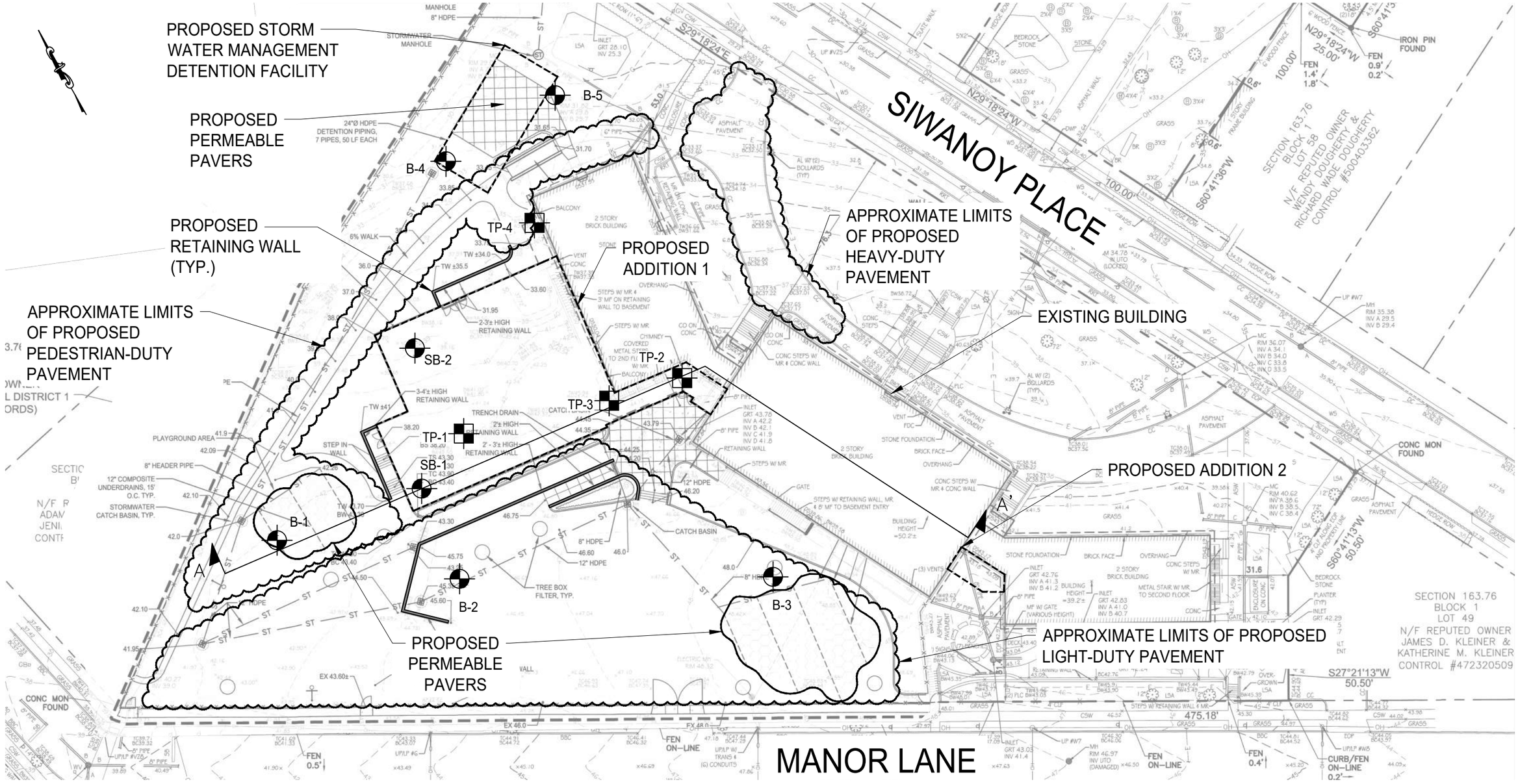
LOCUS PLAN
SIWANOY ELEMENTARY SCHOOL
PELHAM, NEW YORK

REFERENCE:
U.S.G.S. 7.5 MINUTE QUADRANGLE: MOUNT VERNON, NEW YORK (2023).

SCALE IN FEET
0 1000 2000 4000

DRAWN BY:	DNC
REVIEWED BY:	TLC
PROJECT NO.	5022-003.00
DATE	12/19/2025
FIGURE NO.	1

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NOTES:

1. BASE PLAN ADAPTED FROM AN ELECTRONIC VERSIONS OF THE *BOUNDARY & TOPOGRAPHIC SURVEY* PLAN, LAST REVISED OCTOBER 22, 2025, AND PREPARED BY GALLAS SURVEYING GROUP, AND THE *GRADING AND DRAINAGE* PLAN, DATED FEBRUARY 20, 2026, AND PREPARED BY KG+D ARCHITECTS, PC.
2. THE LOCATIONS OF THE PROPOSED ADDITIONS WERE REFERENCED FROM THE *TEST BORING AND TEST PIT PLAN*, DATED NOVEMBER 11, 2025 AND PROVIDED BY THE PROJECT TEAM.
5. THE APPROXIMATE LIMITS OF PROPOSED PEDESTRIAN-, LIGHT-, AND HEAVY-DUTY PAVEMENTS WERE REFERENCED FROM A SKETCH PROVIDED BY THE CLIENT VIA EMAIL ON MARCH 16, 2026.
6. BORINGS WERE PERFORMED BY CORE DOWN DRILLING LLC AND OBSERVED AND LOGGED BY GEODESIGN PERSONNEL. TEST PITS WERE PERFORMED BY JCM SERVICES, INC. AND OBSERVED AND LOGGED BY GEODESIGN PERSONNEL.
7. THE LOCATIONS OF THE EXPLORATIONS WERE DETERMINED BY TAPE MEASUREMENTS FROM EXISTING SITE FEATURES. EXPLORATION LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

SB-1 — LOCATION AND NO. OF TEST BORING FOR PROPOSED ADDITION BY GEODESIGN, INC.

B-1 — LOCATION AND NO. OF TEST BORING FOR PROPOSED STORMWATER MANAGEMENT/PAVEMENT IMPROVEMENTS BY GEODESIGN, INC.

TP-1 — LOCATION AND NO. OF TEST PIT BY GEODESIGN, INC.

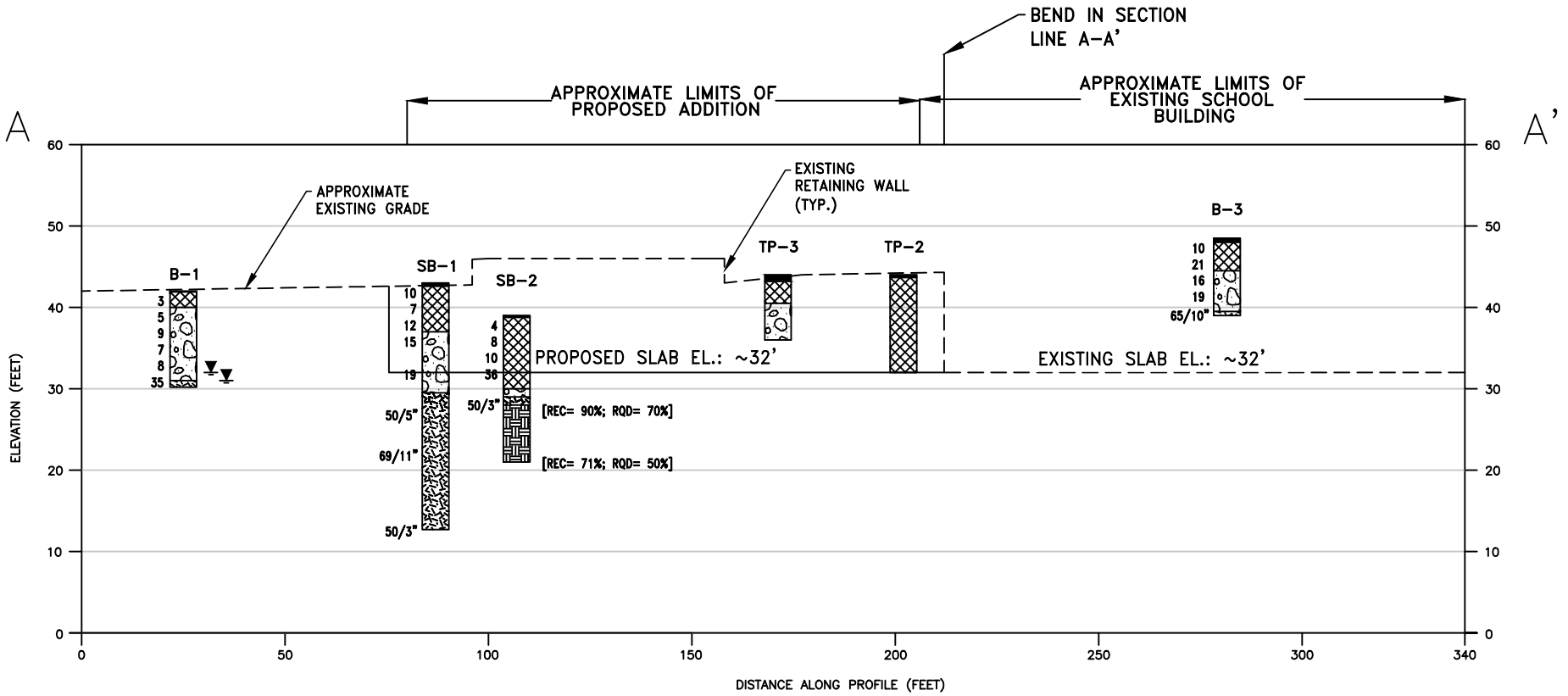
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CHECKED BY TLC						
APPROVED BY JFW	NO.	DATE	REVISIONS	DRWN	CHKD	APPVD

SCALE 1" = 40'
40' 20' 0' 40'

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PROJECT: SIWANOY ELEMENTARY SCHOOL PELHAM, NEW YORK	PROJECT NO.: 5022-003.00
	DATE: 3/16/2025
DWG. TITLE: EXPLORATION LOCATION PLAN	FIGURE NO.: 2

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LEGEND

ASPHALT | FILL | SAND AND GRAVEL | DECOMPOSED BEDROCK | BEDROCK

NOTES:

1. REFER TO FIGURE 2 FOR LOCATION OF SUBSURFACE PROFILE.
2. DATA CONCERNING THE VARIOUS STRATA HAVE BEEN INTERPRETED AT BORING LOCATIONS ONLY. THE STRATIGRAPHY BETWEEN BORINGS MAY VARY FROM THAT SHOWN.
3. NUMBERS DISPLAYED BESIDE BORINGS REPRESENT SPT N–VALUES CORRESPONDING TO THEIR RESPECTIVE SAMPLING INTERVAL.
4. GROUNDWATER LEVEL MEASUREMENTS WERE MADE AT TIMES AND UNDER THE CONDITIONS AS STATED ON THE BORING LOGS. REFER TO BORING LOGS AND REPORT TEXT FOR DETAILS.

VERTICAL SCALE 1" = 20'
20' 10' 0' 20'

HORIZONTAL SCALE 1" = 40'
40' 20' 0' 40'

DRAWN BY: MTH

REVIEWED BY: TLC

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PROJECT
SIWANOY ELEMENTARY SCHOOL
PELHAM, NEW YORK

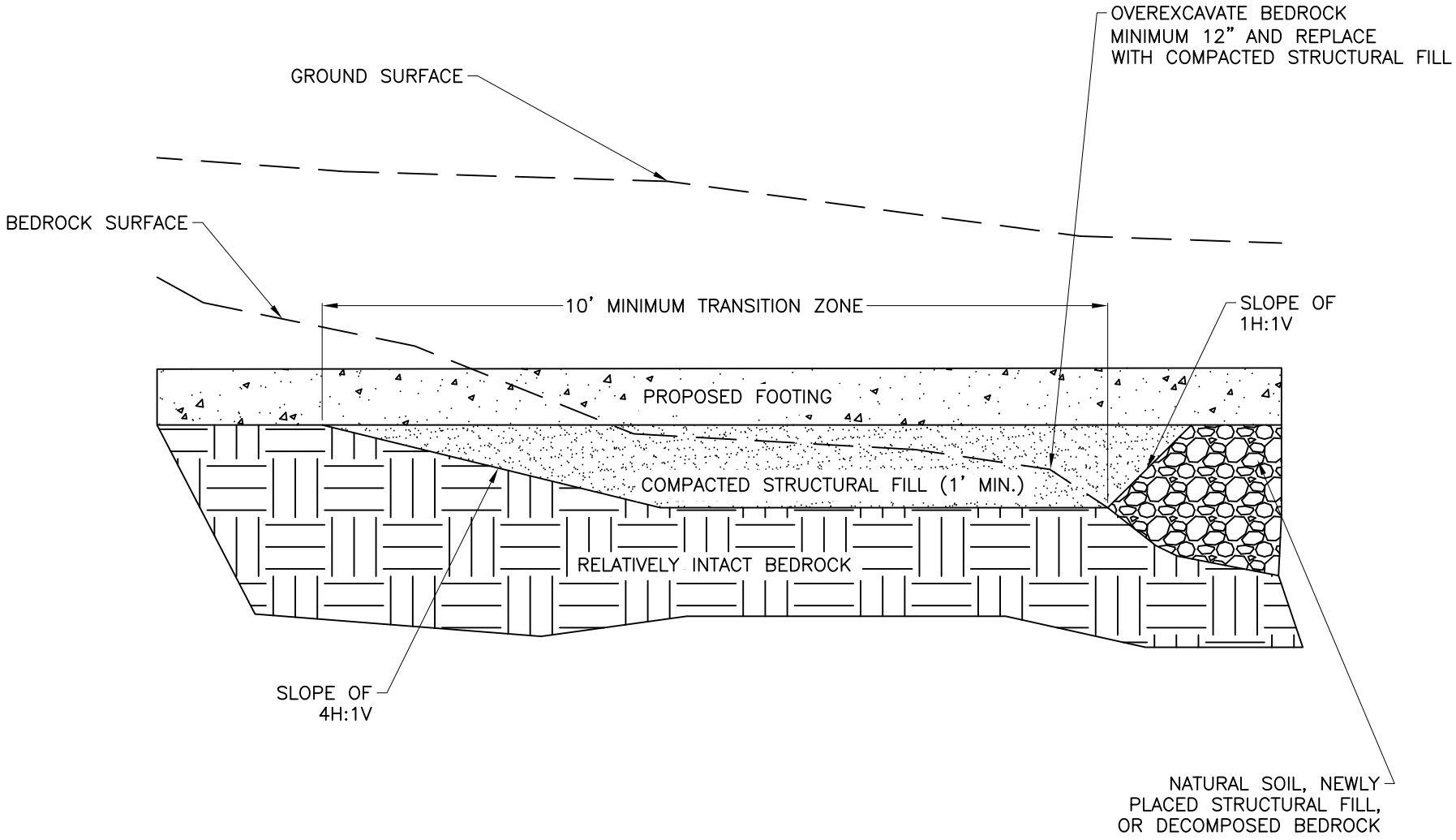
PROJECT NO.
5022–003.00

DATE
2/24/2026

DWG. TITLE
PROFILE A–A'

DRAWING NO.
3

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DRAWN BY: MTH	REVIEWED BY: TLC		DWG. TITLE: TRANSITION DETAIL FOR FOOTING/SLAB

PROJECT NO. 5022-003.00
DATE 3/4/2026
FIGURE NO. 4

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GEO DESIGN

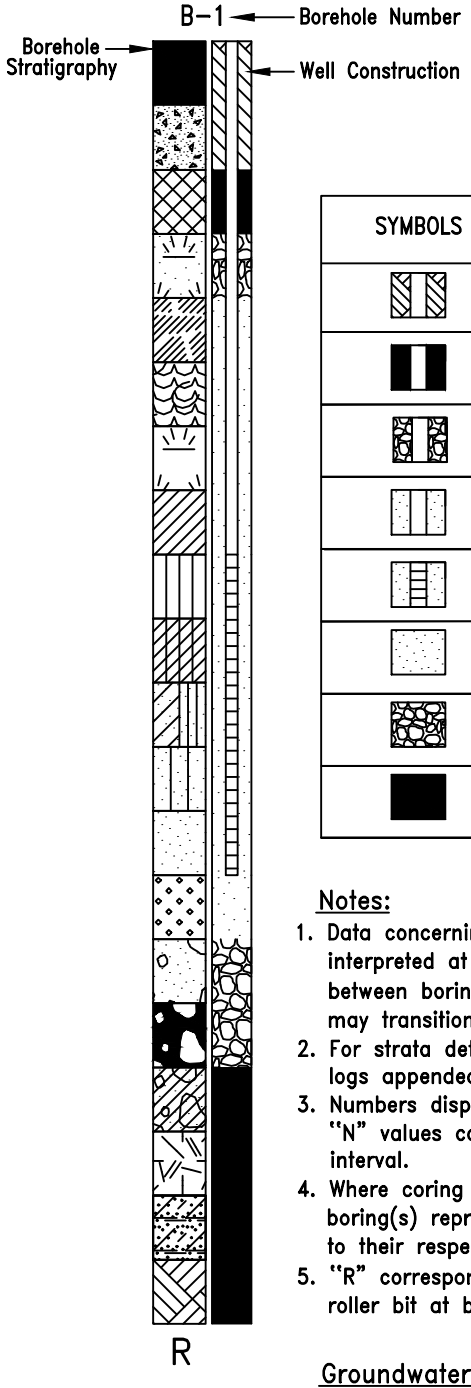
Appendix 2

Test Boring Logs

STRATIGRAPHY SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS OF PREDOMINENT MATERIAL TYPE
	ASPHALT
	CONCRETE
	FILL
	TOPSOIL
	SUBSOIL
	ORGANIC SILT OR CLAY WITH SHELLS
	PEAT
	CLAY
	SILT
	CLAY/SILT MIXTURE
	CLAY/SILT/SAND MIXTURE
	SILT/SAND MIXTURE
	POORLY-GRADED SAND
	WELL-GRADED SAND
	SAND/GRAVEL MIXTURE
	BOULDERS AND/OR COBBLES
	GLACIAL TILL
	DECOMPOSED BEDROCK
	SANDSTONE
	BEDROCK

EXPLANATION OF BORING



WELL SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS
	CEMENT SEAL: 1 PIPE
	BENTONITE SEAL: 1 PIPE
	SLOUGH BACKFILL: 1 PIPE
	FILTER PACK: 1 PIPE
	SLOTTED PIPE WITH FILTER PACK: 1 PIPE
	FILTER PACK AT BOTTOM OF HOLE
	SLOUGH AT BOTTOM OF HOLE
	BENTONITE AT BOTTOM OF HOLE

Notes:

1. Data concerning the various strata have been interpreted at boring locations only. The stratigraphy between borings may vary from that shown, and may transition more gradually within borings.
2. For strata details, see Report and boring logs appended to this report.
3. Numbers displayed beside boring(s) represent SPT "N" values corresponding to their respective sampling interval.
4. Where coring was performed, numbers displayed beside boring(s) represent Recovery and RQD values corresponding to their respective sampling interval.
5. "R" corresponds to refusal of sampler, casing and/or roller bit at bottom of boring.

Groundwater Observations (where applicable)

▽ Water Level Reading at time of drilling.

▼ Water Level Reading after completing drilling.

GEO DESIGN

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BORING LOG/
SUBSURFACE PROFILE LEGEND

ACAD FILE No. M:_TECHNICAL_VT\FIELD RELATED TEMPLATES\Borings\GeoDesign logs\GEODesign Boring Log Legend.dwg

EXPLANATION OF THE FORM - BORING LOG

The following provides an explanation of the various fields on the Boring Log form.

BORING LOG HEADING

Project and Boring Details
Within the upper portion of the Boring Log, details with regards to the Project Name and Location, Boring Number, and Geo**Design**'s file number are provided. In addition, within the upper section of the Boring Log, the Drilling Company's name, and their representative, together with the name of Geo**Design**'s representative, are presented. Details with regards to the dates when the boring was drilled, its coordinates or other location references and the corresponding surface elevation may also be provided. Where applicable, the Datum used is provided in the text of the Report.

Casing and Sampler
This section provides a summary of the typical size of samplers and casings used, together with the type of drilling rig. See below for a description of samplers.

Groundwater Observations
Water levels typically indicated on the Boring Log are levels measured in the boring at the times indicated. In permeable materials, the indicated levels may reflect the location of groundwater. In low permeability soils and/or due to effects of the casing, the accurate determination of groundwater levels may not be possible with only short term observations.

CENTRAL PORTION OF BORING LOG

DEPTH
This column gives the depth scale of the boring, in feet or meters.

CASING BLOWS
Indicates the number of blows per foot (0.3 m) required to advance the casing, using a 136 kg (300-pound) hammer.

SAMPLE INFORMATION

The initial columns provide the sample number, sample type, penetration, recovery and sample depth. The Sample Type Coding is as follows:

A - Auger Sample	PS- Undisturbed Piston - 3" (76 mm)	SSL - Large Split-Barrel - 3" (76 mm)	V - Vane Test
C - Core - Diamond Bit - NX double tube, unless otherwise noted.	SS - Split-Barrel (Split-Spoon)	ST - Shelby Tube - 3" (76 mm)	

Blows / 6 inch (0.15 meter) Interval
Representative soil samples were obtained in the boring by split-barrel sampling procedures in general accordance with ASTM D 1586. The split-barrel sampling procedure utilizes a standard 51 mm (2") outside diameter split-barrel sampler that is driven into the bottom of the boring with a 63.5 kg (140-pound) hammer falling a distance of 0.76 m (30"). The number of blows required to advance the sampler in 0.15 m (6") increments is recorded as part of the Standard Penetration Test (SPT). These values are indicated at their depth of occurrence.

The number of blows required to advance the split-barrel sampler the middle two - 0.15 m (6") increments of a 0.61 m (24") penetration is recorded as the Standard Penetration Resistance Value ("N").

Where the sampler advanced by Weight of Rods or Weight of Hammer, the designation WOR and WOH, respectively, was used. In the case of PS or ST samples, the designation PUSH was used.

Coring Time
This column provides the rate in minutes at which the core barrel was advanced into the bedrock (or boulder) in one foot (0.3 m) intervals.

PID Reading - Where Applicable
This column provides results for samples which were screened in the field with a photoionization detector for the presence of volatile organic compounds (including certain petroleum constituents) calibrated relative to benzene in air standard.

Moisture Content (%) - Where Applicable
This column provides moisture content determination results for the samples tested.

SAMPLE DESCRIPTION

This column provides a description of the soil and bedrock units, based on visual observation of the samples, sometimes in conjunction with field and laboratory tests. Each sample was generally described according to the following classification and terminology. In general, description of the soil units followed the Burmister classification system.

SOIL PROPERTIES & DESCRIPTIONS

TEXTURE*

Component	Size (mm)
CLAY	< 0.002 mm
SILT	< #200 Sieve (0.075 mm)
SAND	#200 to #4 Sieve (0.075 mm to 4.75 mm)
Fine	#200 to #40 Sieve (0.075 mm to 0.425 mm)
Medium	#40 to #10 Sieve (0.425 mm to 2.00 mm)
Coarse	#10 to #4 Sieve (2.00 mm to 4.75 mm)
GRAVEL	#4 Sieve to 3 in (4.75 mm to 76 mm)
Fine	#4 Sieve to 3/4 in (4.75 mm to 19 mm)
Coarse	3/4 in to 3 in (19 mm to 76 mm)
COBBLES	3 in to 12 in (76 mm to 305 mm)
BOULDERS	> 12 in (305 mm)

*textural classification as determined by sieve and hydrometer analyses

COMPOSITION

Principal Component in Upper Case i.e. >50%
CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS

Minor Component Upper and Lower Case i.e.<50%
Clay, Silt, Sand, Gravel, Cobbles, Boulders

DESCRIPTIVE ADJECTIVE	PERCENTAGE REQUIREMENT
trace	<10 %
little	10 - 20 %
some	20 - 35 %
and	35 - 50 %

MOISTURE CONDITION

Dry	Absence of moisture, dusty
Moisture	Damp but no visible water
Wet	Visible free water

COHESIVE SOILS

ESTIMATED CONSISTENCY CLASSIFICATION ***	"N" Value
Very Soft	< 2
Soft	2 - 4
Medium	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	> 30

*** empirical relationship

COHESIONLESS SOILS

ESTIMATED COMPACTNESS DESCRIPTION ***	"N" Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

PLASTICITY - Burmister

Degree of Plasticity	Soil Type	Smallest Diameter of Thread**
Non-Plastic	SILT	None
Slight	Clayey SILT	1/4" (6 mm)
Low	SILT & CLAY	1/8" (3 mm)
Medium	CLAY & SILT	1/16" (1.6 mm)
High	Silty CLAY	1/32" (0.8 mm)
Very High	CLAY	1/64" (0.4 mm)

** moisture at or near optimum

STRUCTURE

Stratified,	>6 mm (1/4")
Laminated,	< 6 mm (1/4")
Parting,	0 to 1.6 mm (1/16")
Seam,	1.6 to 13 mm (1/2")
Layer,	13 to 305 mm (12")
Stratum,	> 305 mm (12")

BEDROCK PROPERTIES & DESCRIPTIONS

RECOVERY AND ROCK QUALITY DESIGNATION (RQD)

Recovery is defined as the length of core obtained expressed as a percentage of the total length cored.

RQD is defined as the total length of sound core pieces, 4 inches (100 mm) or greater in length, excluding drilling breaks, expressed as a percentage of the total length cored. RQD provides an indication of the integrity of the rock mass and relative extent of seams and bedding planes.

Classification	RQD %
Very Poor Quality	0 - 25
Poor Quality	25 - 50
Fair Quality	50 - 75
Good Quality	75 - 90
Excellent Quality	90 - 100

HARDNESS

TYPICAL ROCK TYPES		Moh's Hardness Scale
Hard	Cannot be scratched with knife	> 5.5
Moderately Hard	Can scratch with knife but not fingernail	5.5 - 2.5
Soft	Can be scratched with fingernail	< 2.5
SANDSTONE		
Well Cemented	Capable of scratching a knife blade	5.5 - 2.5
Cemented	Can be scratched with knife	< 2.5
Poorly Cemented	Can be broken apart easily with fingers	

WEATHERING

Fresh	No visible signs of weathering
Slightly Weathered	Slight discoloration of parent material in joints and seams
Moderately Weathered	Less than 35% of rock material is decomposed. Fresh or discolored rock is present.
Highly Weathered	More than 35% of rock material is decomposed. Fresh or discolored rock is present.
Extremely Weathered	All rock material is decomposed to soil. Rock mass structure may still be intact.

SPACING OF DISCONTINUITIES

Bedding	Jointing	Spacing (inches)	Spacing (mm)
Very Thick Bedded	Very Wide	>80	>2000
Thick Bedded	Wide	24 - 80	600 - 2000
Medium Bedded	Moderate	8 - 24	200 - 600
Thin Bedded	Close	2.4 - 8	60 - 200
Very Thin Bedded	Very Close	0.8 - 2.4	20 - 60
Laminated	Shattered	0.24 - 0.8	6 - 20
Thinly Laminated	Fissured	<0.24	<6

When classification of rock materials has been estimated from disturbed samples, core samples and petrographic analysis may reveal other rock types.

SYMBOL
This column provides a graphical representation of the soil and bedrock units, and inferred geological contacts. See Subsurface Profile Legend.

STRATA DESCRIPTION (ELEVATION/DEPTH)
This column gives the elevation and depth of inferred geological contacts together with a general description of the respective soil and bedrock units. Stratification lines represent approximate boundaries between material types, transitions may be gradual.

BORING LOG FOOTER

The lower portion of the log provides additional drilling notes within the Remarks section together with additional General Notes.

GEO DESIGN
Geotechnical | Construction | Environmental
Engineers and Scientists
984 Southford Road - Middlebury, CT 06762
Telephone: 203-758-8836 Fax:

BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: B-1
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company: Core Down Drilling, LLC
Foreman: Bill Johnson
GeoDesign Rep.: Matt Hassiak
Date Started: February 16, 2026 Date Finished: February 16, 2026
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 42
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/16/26	10.0	32.0	Wet sample
2/16/26	11.0	31.0	In HSA after 10 minutes

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
						0.0							ASPHALT 41.9		ASPHALT: 1"
		1	SS	18	7	0.5	2	2	1				SUBBASE 41.6 FILL		SUBBASE: 4"
													2.0		Very loose, brown, fine to coarse SAND, some fine to coarse Gravel, some (-) Silt
		2	SS	24	8	2.0	3	2	3	4			SAND AND GRAVEL 40.0		Loose, light brown, fine SAND, some Silt, little fine Gravel
5		3	SS	24	10	4.0	4	5	4	4					Loose, light brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt
		4	SS	24	14	6.0	3	3	4	4					Loose, brown to gray, fine to coarse SAND, some fine to coarse GRAVEL, trace Silt
		5	SS	24	20	8.0	3	4	4	11					Loose; Top 12": Brown to gray, fine to coarse GRAVEL, some fine to coarse Sand, little Silt Bottom 8": Gray, fine SAND, some Silt
10		6	SS	24	14	10.0	4	5	30	50/3"			11.0		Dense; Top 7": Brown, fine to coarse SAND, some fine to coarse Gravel, little Silt Bottom 7": Light gray, fine to coarse GRAVEL, little fine to coarse Sand, trace Silt
													DECOMPOSED ROCK 31.0 11.8		
													Bottom of Exploration at 11.8 ft 30.2		
															Infiltration test at approximately 2'. Stabilized infiltration rate: 6.23 in/hr
15															
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Dynamic Cone Penetration (DCP) testing performed at approximately 6".
3. Borehole infiltration test performed at offset location adjacent to borehole at a depth of approximately 2' below existing grade.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

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Engineers and Scientists
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BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: B-2
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company: Core Down Drilling, LLC
Foreman: Bill Johnson
GeoDesign Rep.: Matt Hassiak
Date Started: February 16, 2026 Date Finished: February 16, 2026
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 46
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/16/26	8.0	38.0	Wet sample

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
						0.0							0.5 ASPHALT		ASPHALT: 6"
		1	SS	18	6	0.5	1	3	1				SUBBASE 45.5		SUBBASE: 1"
													FILL 45.4		Loose, light brown to gray, fine to medium SAND, some Silt, trace Root Fibers
		2	SS	24	14	2.0	2	3	4	5			2.0 SAND AND GRAVEL 44.0		Loose, light brown to orangish brown, fine to coarse SAND, some (-) fine Gravel, little (-) Silt
5		3	SS	24	12	4.0	5	8	6	7					Medium dense, brown to gray, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt
		4	SS	24	13	6.0	5	9	7	19					Medium dense, orangish brown to gray, fine to coarse GRAVEL, some fine Sand, little Silt
		5	SS	24	24	8.0	12	6	6	7					Medium dense, brown to gray, fine to coarse SAND, some fine to coarse Gravel, little Silt
10		6	SS	24	19	10.0	7	21	25	30			11.0		Dense; Top 11": Brown to gray, fine to coarse GRAVEL, some fine to coarse Sand, little Silt
													DECOMPOSED ROCK 35.0		Bottom 8": Gray, fine to coarse SAND
													12.0 Bottom of Exploration at 12.0 ft 34.0		Infiltration test at approximately 2'. Stabilized infiltration rate: 3.94 in/hr
15															
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Dynamic Cone Penetration (DCP) testing performed at approximately 10".
3. Borehole infiltration test performed at offset location adjacent to borehole at a depth of approximately 2' below existing grade.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

BORING LOG

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Telephone: 203-758-8836 Fax:

Project Name: Siwanoy Elementary School, Pelham, New York

Boring No.: **B-3**
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company:	Core Down Drilling, LLC		
Foreman:	Bill Johnson		
GeoDesign Rep.:	Matt Hassiak		
Date Started:	February 16, 2026	Date Finished:	February 17, 2026
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	48.5		
Station:		Offset: ft	

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/17/26			Not encountered

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
		1	SS	24	5	0.0	2	5	5	11			0.5 ASPHALT		ASPHALT: 6"
													SUBBASE 48.0		SUBBASE: 1"
													FILL 47.9		Medium dense, brown, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt
		2	SS	24	7	2.0	12	9	12	7					Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt
													4.0		
5		3	SS	24	16	4.0	7	8	8	10			SAND AND GRAVEL 44.5		Medium dense, brown to orangish brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt
		4	SS	24	13	6.0	7	8	11	15					Medium dense, brown to gray, fine to coarse GRAVEL, some fine to coarse Sand, little Silt
		5	SS	16	14	8.0	10	15	50/4"				9.0		Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Silt
10													9.5 DECOMPOSED ROCK 39.5 39.0		
													Bottom of Exploration at 9.5 ft		
15															
20															

Remarks:
1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Dynamic Cone Penetration (DCP) testing performed at approximately 7".

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

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BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: B-4
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company: Core Down Drilling, LLC
Foreman: Bill Johnson
GeoDesign Rep.: Matt Hassiak
Date Started: February 16, 2026 Date Finished: February 16, 2026
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 32
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/16/26	10.0	22.0	Wet sample
2/16/26	10.5	21.5	In HSA after 10 minutes

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
						0.0							TOPSOIL		TOPSOIL: 3"
		1	SS	18	8	0.5	2	2	1				FILL 31.7		Very loose, brown, fine to coarse SAND, some (-) fine Gravel, trace Silt, trace Concrete Fragments
		2	SS	24	14	2.0	2	2	3	4					Loose, brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt, trace Root Fibers
5		3	SS	24	18	4.0	3	5	5	4					Medium dense, brown, fine to coarse SAND, little fine Gravel, little Silt, trace Wood Fragments
		4	SS	24	0	6.0	4	3	5	8					Loose; No recovery
		5	SS	24	13	8.0	2	2	3	1					Loose, brown, fine to coarse Sand and SIlt, little fine Gravel, trace Wood Fragments, trace Brick Fragments
10		6	SS	24	17	10.0	WOH	2	3	3					Loose; Top 14": Brown, fine to coarse SAND and SILT, little fine Gravel, trace Root Fibers, trace Brick Fragments
													11.5		Bottom 3": Gray, fine to coarse SAND and fine GRAVEL, trace Silt (Petroleum odor noted)
													12.0 SAND AND GRAVEL 20.5		
													Bottom of Exploration at 12.0 ft 20.0		Infiltration test at approximately 6'. Stabilized infiltration rate: 0.54 in/hr
15															
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Dynamic Cone Penetration (DCP) testing performed at approximately 6".
3. Borehole infiltration test performed at offset location adjacent to borehole at a depth of approximately 6' below existing grade.
4. Petroleum odor noted in Sample S-6.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

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BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: B-5
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company:	Core Down Drilling, LLC		
Foreman:	Bill Johnson		
GeoDesign Rep.:	Matt Hassiak		
Date Started:	February 16, 2026	Date Finished:	February 16, 2026
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	30.5		
Station:		Offset: ft	

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/16/26	10.0	20.5	Wet sample
2/16/26	8.0	22.5	In HSA after 10 minutes

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
						0.0							TOPSOIL 30.3		TOPSOIL: 3"
		1	SS	18	12	0.5	5	14	12				FILL		Medium dense, brown, fine to coarse SAND, little fine Gravel, trace Silt
		2	SS	24	17	2.0	9	8	7	5					Medium dense, brown, fine to coarse SAND, little fine Gravel, trace Silt, trace Brick Fragments, trace Asphalt Fragments
5		3	SS	24	24	4.0	4	5	8	11					Medium dense, brown, fine to coarse SAND, some (-) fine Gravel, little (-) Silt, trace Organic Fibers, trace Brick Fragments
		4	SS	24	21	6.0	5	6	5	6					Medium dense, brown, fine to coarse SAND, some (-) fine to coarse Gravel, little Silt
		5	SS	24	14	8.0	5	17	16	6					Dense, brown, fine to coarse SAND, little fine to coarse Gravel, little Silt, trace Concrete Fragments, trace Wood Fragments
10		6	SS	24	4	10.0	28	18	8	10					Medium dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Silt, trace Plastic Scraps
													12.0 Bottom of Exploration at 12.0 ft 18.5		Infiltration test at approximately 5'. Stabilized infiltration rate: 4.13 in/hr
15															
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Dynamic Cone Penetration (DCP) testing performed at approximately 6".
3. Borehole infiltration test performed at offset location adjacent to borehole at a depth of approximately 5' below existing grade.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

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BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: SB-1
Page No.: 1 of 2
File No.: 5022-003
Checked By: TLC

Boring Company: Core Down Drilling, LLC
Foreman: Bill Johnson
GeoDesign Rep.: Matt Hassiak
Date Started: February 17, 2026 Date Finished: February 17, 2026
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 43
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/17/26			Not encountered

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
													0.4 ASPHALT		ASPHALT: 5"
		1	SS	18	14	0.5	6	7	3				FILL 42.6		Medium dense; Top 9": Dark brown, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, trace Asphalt Fragments
		2	SS	24	15	2.0	2	3	4	11					Bottom 5": Brown, fine to coarse SAND, little Silt, trace fine Gravel, trace Brick Fragments
															Loose, brown, fine to coarse GRAVEL, some fine to coarse Sand, little Silt
5		3	SS	24	14	4.0	6	8	4	3					Medium dense, brown to gray, fine to coarse SAND, little fine to coarse Gravel, little Silt
													6.0		
		4	SS	24	11	6.0	3	4	11	13			SAND AND GRAVEL 37.0		Medium dense, gray to brown, fine to coarse SAND, some fine to coarse Gravel, little Silt
10		5	SS	24	18	10.0	4	8	11	11					Medium dense, gray to brown, fine to coarse SAND, some Silt, little fine Gravel
													13.5		
15		6	SS	5	5	15.0	50/5"						DECOMPOSED ROCK 29.5		Very dense, gray, fine to coarse SAND, some fine to coarse Gravel, trace Silt
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Increase in drilling effort required at a depth of approximately 28'.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

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BORING LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Boring No.: SB-1
Page No.: 2 of 2
File No.: 5022-003
Checked By: TLC

Boring Company: Core Down Drilling, LLC
Foreman: Bill Johnson
GeoDesign Rep.: Matt Hassiak
Date Started: February 17, 2026 Date Finished: February 17, 2026
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 43
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/17/26			Not encountered

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
		7	SS	17	17	20.0	16	19	50/5"				DECOMPOSED ROCK *(Continued)*		Very dense, gray, fine to coarse SAND, little fine to coarse Gravel, trace Silt
25															
30															
		8	SS	3	3	30.0	50/3"						30.3 Bottom of Exploration at 30.3 ft 12.7		Very dense, gray, fine to coarse SAND, some coarse Gravel, little Silt
35															
40															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Increase in drilling effort required at a depth of approximately 28'.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: SB-1

BORING LOG

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Project Name: Siwanoy Elementary School, Pelham, New York

Boring No.: **SB-2**
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

Boring Company:	Core Down Drilling, LLC		
Foreman:	Bill Johnson		
GeoDesign Rep.:	Matt Hassiak		
Date Started:	February 17, 2026	Date Finished:	February 17, 2026
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	39		
Station:		Offset: ft	

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 55 Track	
Hammer Type:	Automatic - Hydraulic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
2/17/26			See note 6

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Additional Observations (Classification System: Modified Burmister)
		1	SS	24	6	0.0	9	2	2	2			ASPHALT 38.8 FILL		ASPHALT: 3" Loose, brown, fine to coarse SAND, little Silt, trace fine Gravel, trace Root Fibers
		2	SS	24	7	2.0	2	3	5	5					Loose, light brown, fine to coarse SAND, little Silt, little fine Gravel
5		3	SS	24	12	4.0	5	5	5	9					Medium dense, brown, fine to coarse SAND, little Silt, trace fine Gravel
		4	SS	24	16	6.0	14	18	18	9					Dense, brown to gray, fine to coarse GRAVEL, little fine to coarse Sand, trace Silt
10													10.0		
		5	SS	9	9	10.0	11	50/3"					10.5 SAND AND GRAVEL 29.0 11.0 DECOMPOSED ROCK 28.5 BEDROCK 28.0		Very dense; Top 3": Light brown, fine to coarse SAND, some Silt, trace fine Gravel Bottom 6": Gray, fine to coarse GRAVEL, little fine to coarse SAND, trace Silt
		1	C	10	9	11.0	[REC= 90%; RQD= 7"/10" = 70%]				2:18				Fair quality, moderately hard, slightly weathered, gray, fine- to coarse-grained GNEISS REC: 9"/10" = 90% RQD: 7"/10" = 70%
15		2	C	42	30	14.5	[REC= 71%; RQD= 21"/42" = 50%]				1:58 2:00 2:22 1:21				Poor quality, moderately hard, moderately weathered, gray to dark gray, fine- to coarse-grained GNEISS REC: 30"/42" = 71% RQD: 21"/42" = 50%
													18.0 Bottom of Exploration at 18.0 ft 21.0		
20															

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Roller bit and water used to clean top of rock at a depth of 11".
3. Core barrel clogged on collecting Core C-1. Core barrel was removed from the borehole and contents emptied.
4. Roller bit used to advance through apparent weathered seam in the bedrock. Rollerbit refusal at 14.5'.
5. Core barrel clogged on collecting Core C-2. Core barrel was removed from the borehole and contents emptied.
6. Ground water not encountered before using water to collect core samples.

Notes:
1) Stratification lines represent approximate boundary between material types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. AC = After coring; NR = Not Recorded.
3) Abbreviations: A = Auger; C = Core; MC=Macrocore; D = Driven; G = Grab; PS = Piston Sample; SS = Split Spoon; SSL = 3.5 Inch ID Split Spoon; ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

1 - BORING LOG MC 2019 5022-003 BORING LOGS.GPJ GEODESIGN STANDARD .GDT 3/4/26

GEO DESIGN

Appendix 3

DCP Logs and Plots

DCP-1

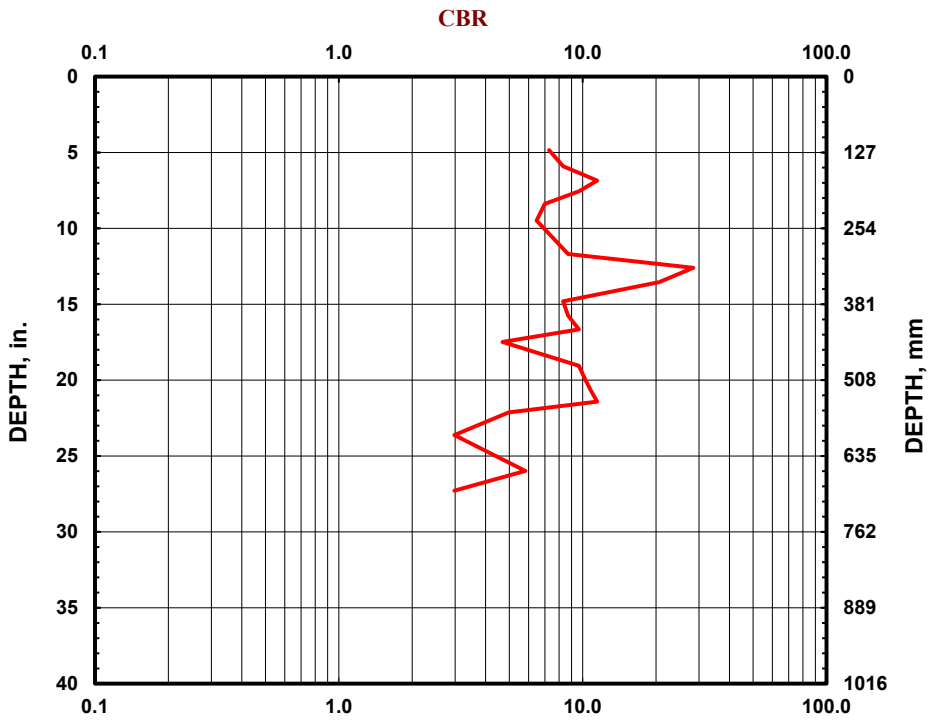
Project: *Siwanoy Elementary School* **Date:** 16-Feb-26

Location: Pelham, New York **Soil Type(s):** SW (Assumed)

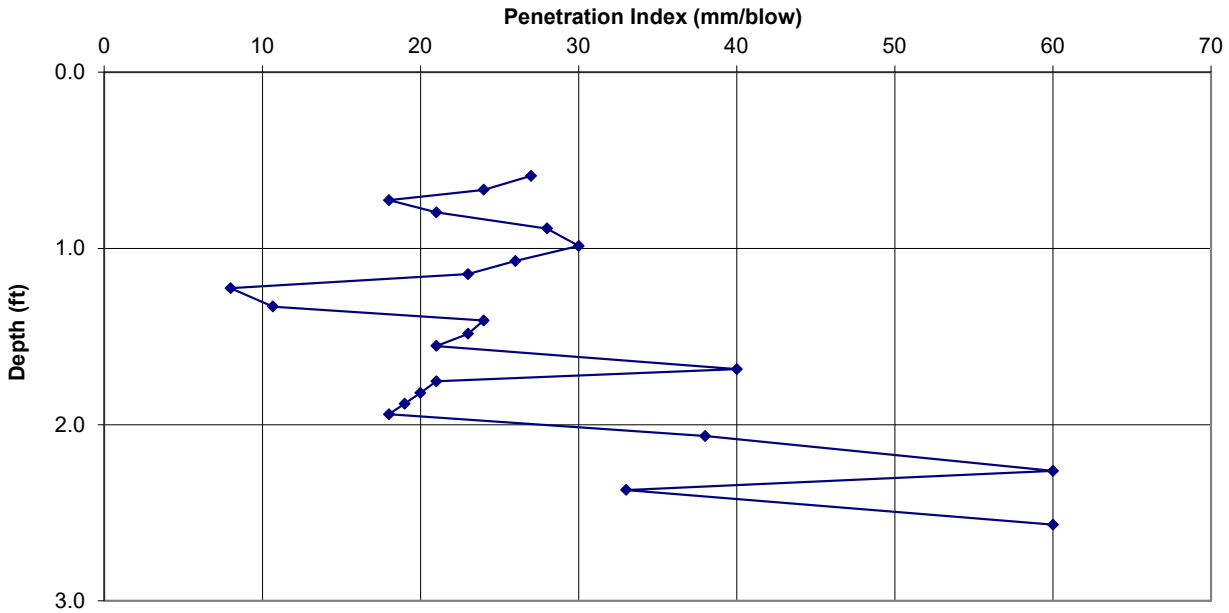
Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

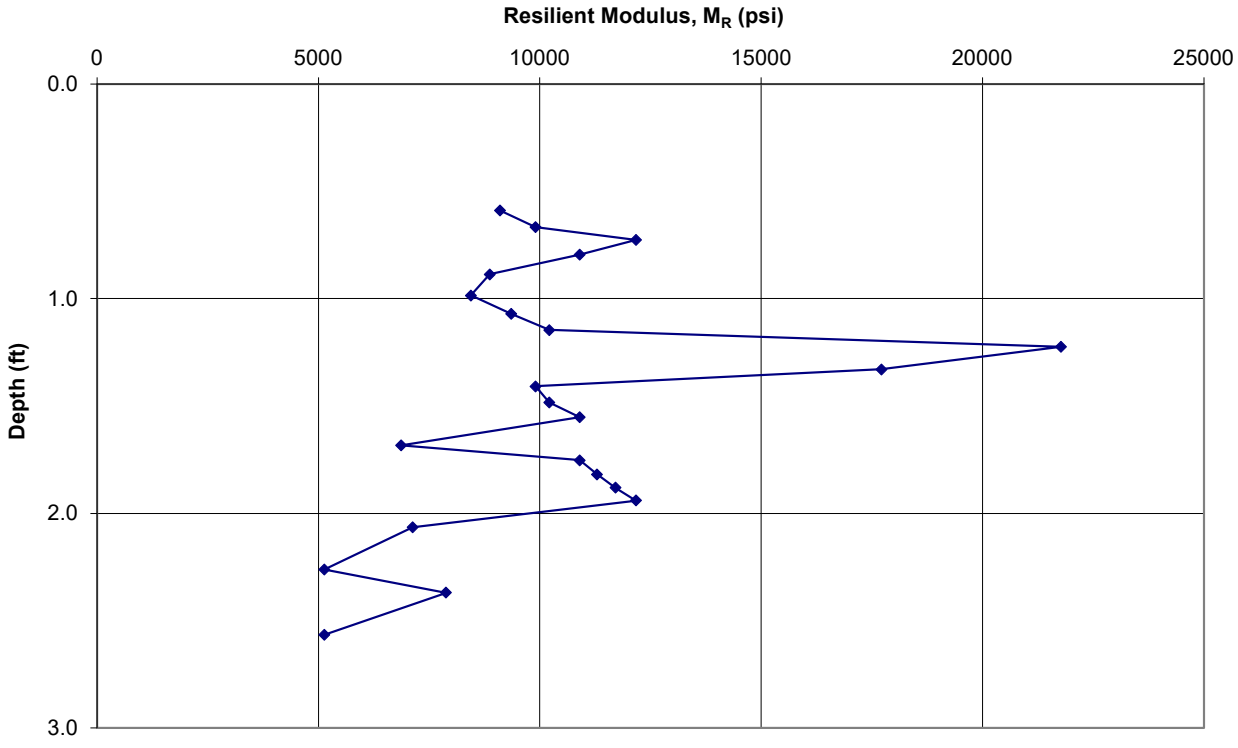
No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	123	1
1	150	1
1	174	1
1	192	1
1	213	1
1	241	1
1	271	1
1	297	1
1	320	1
3	344	1
3	376	1
1	400	1
1	423	1
1	444	1
1	484	1
1	505	1
1	525	1
1	544	1
1	562	1
1	600	1
1	660	1
1	693	1
1	753	1



B-1, DCP-1 - Penetration Index vs. Depth



B-1, DCP-1 - Resilient Modulus vs. Depth



DCP-2

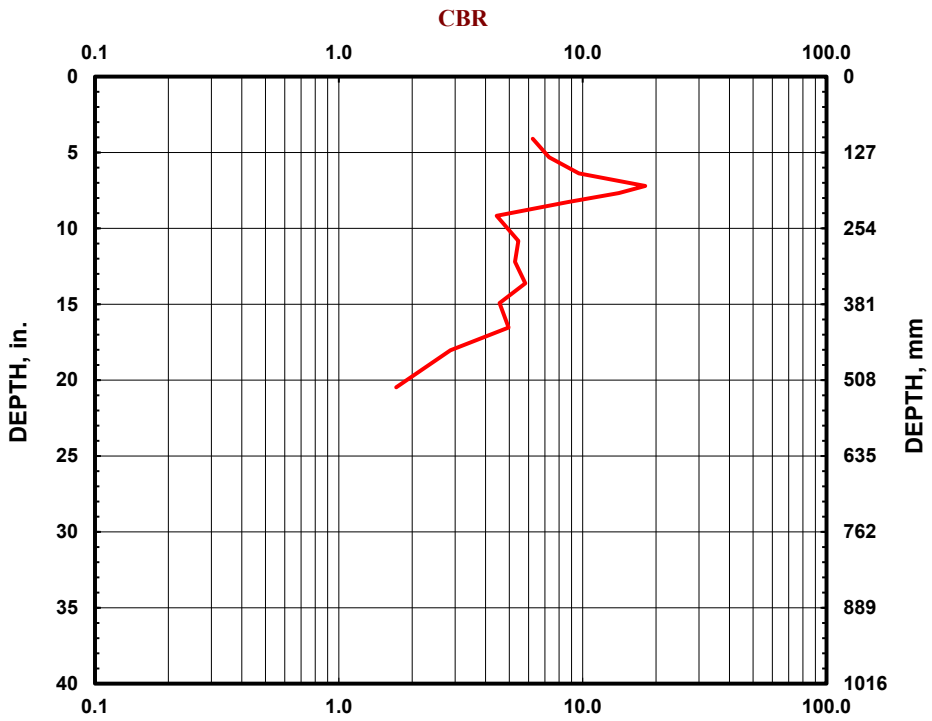
Project: *Siwanoy Elementary School* **Date:** 16-Feb-26

Location: Pelham, New York **Soil Type(s):** SM/ML (Assumed)

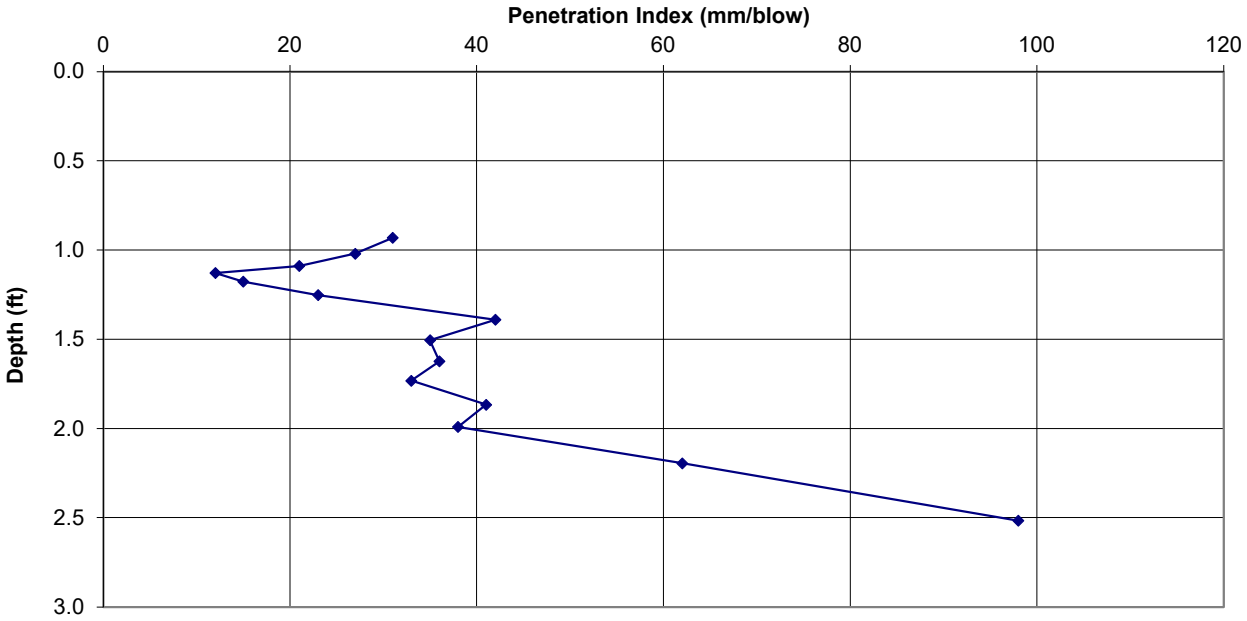
Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

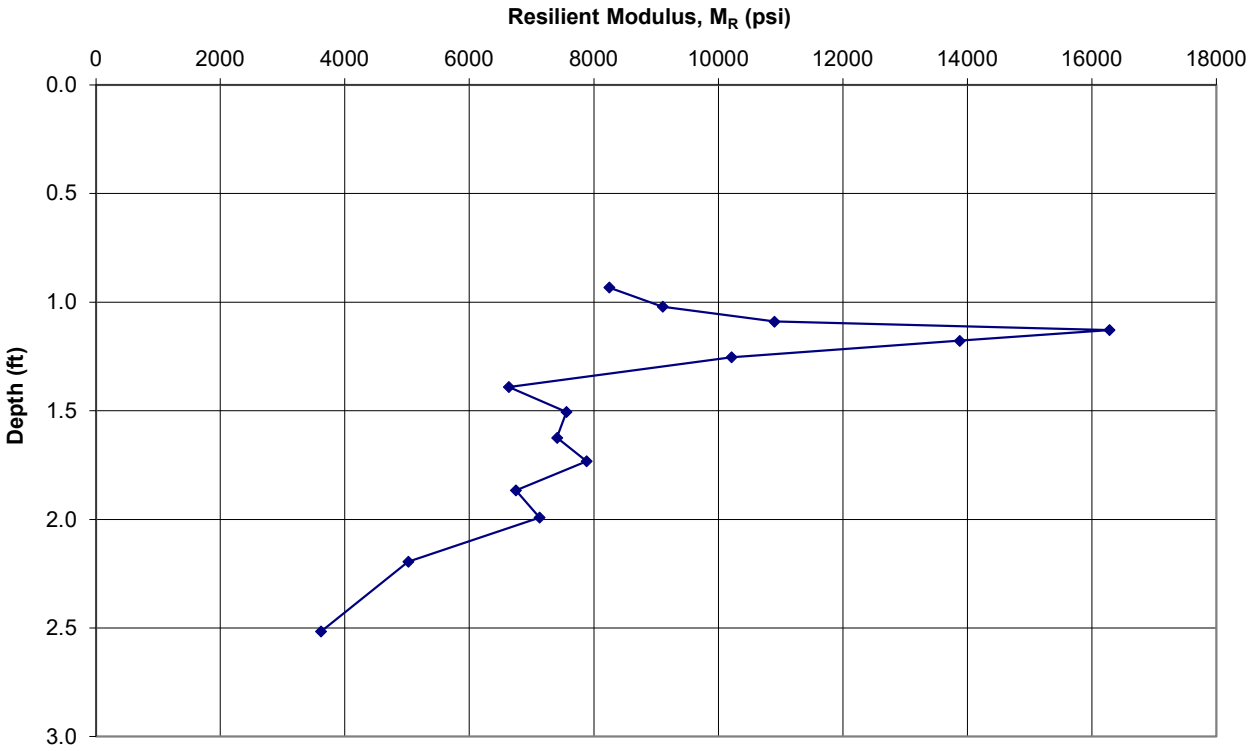
No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	104	1
1	135	1
1	162	1
1	183	1
1	195	1
1	210	1
1	233	1
1	275	1
1	310	1
1	346	1
1	379	1
1	420	1
1	458	1
1	520	1
1	618	1



B-2, DCP-2 - Penetration Index vs. Depth



B-2, DCP-2 - Resilient Modulus vs. Depth



DCP-3

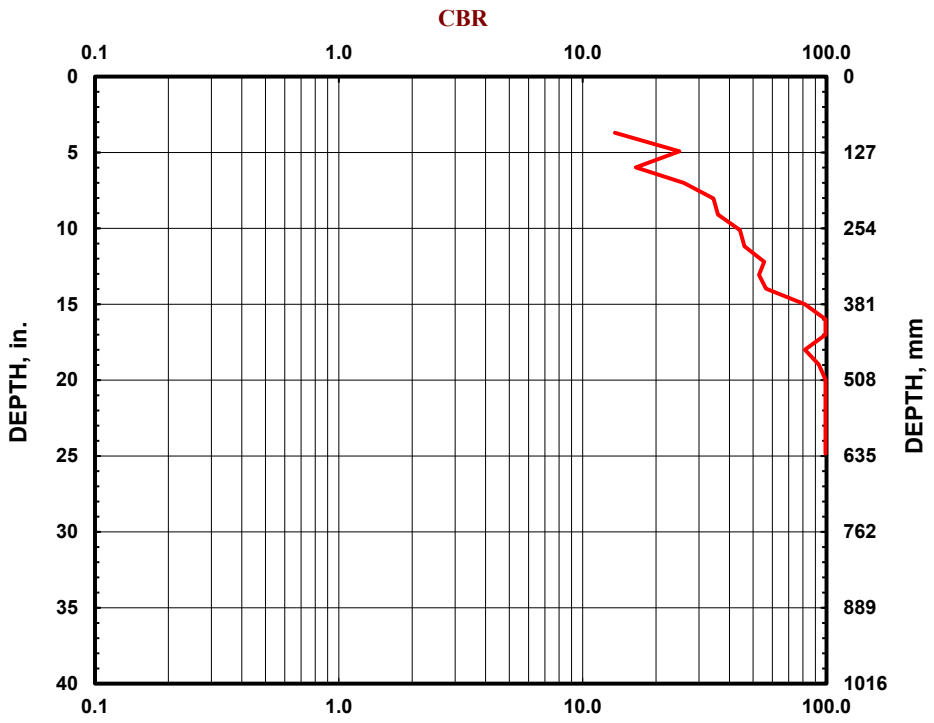
Project: *Siwanoy Elementary School* **Date:** 16-Feb-26

Location: Pelham, New York **Soil Type(s):** Type in the soil type

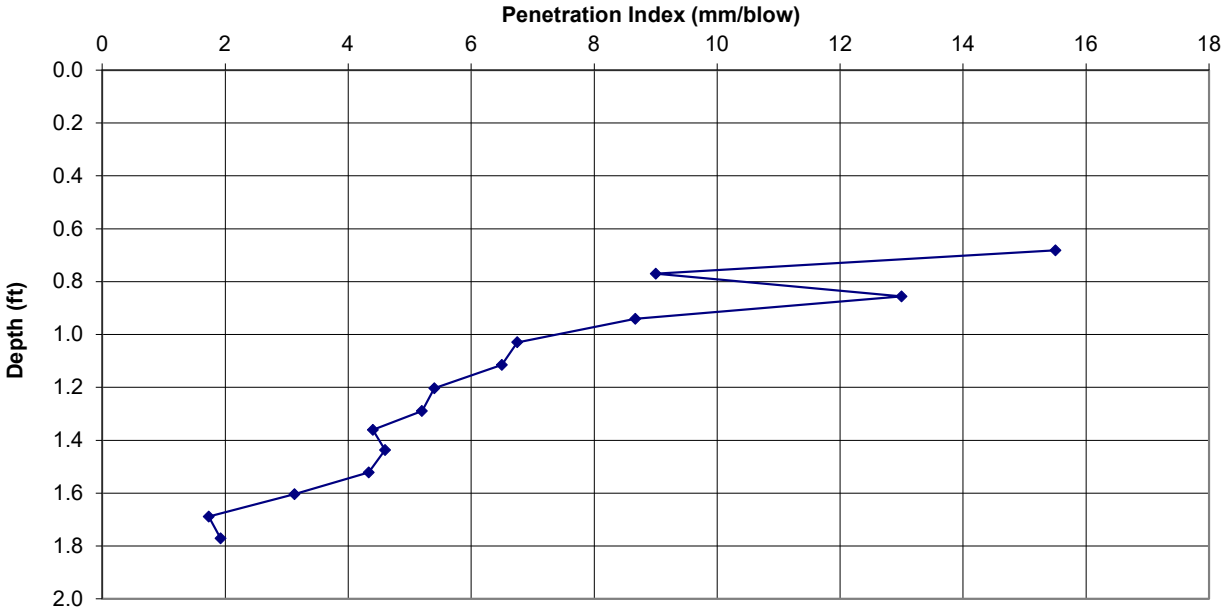
Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

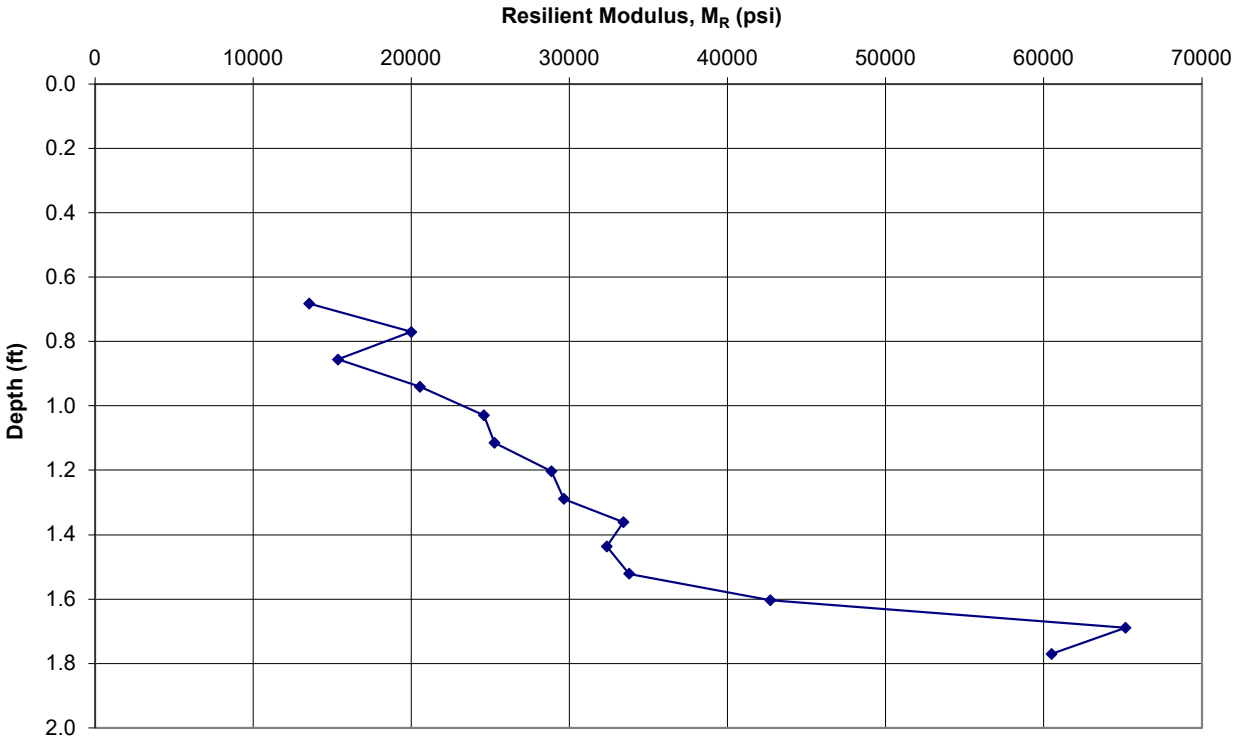
No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	94	1
2	125	1
3	152	1
2	178	1
3	204	1
4	231	1
4	257	1
5	284	1
5	310	1
5	332	1
5	355	1
6	381	1
8	406	1
15	432	1
13	457	1
8	482	1
9	507	1
10	532	1
13	557	1
13	581	1
13	607	1
11	631	1
9	650	1



B-3, DCP-3 - Penetration Index vs. Depth



B-3, DCP-3 - Resilient Modulus vs. Depth



DCP-4

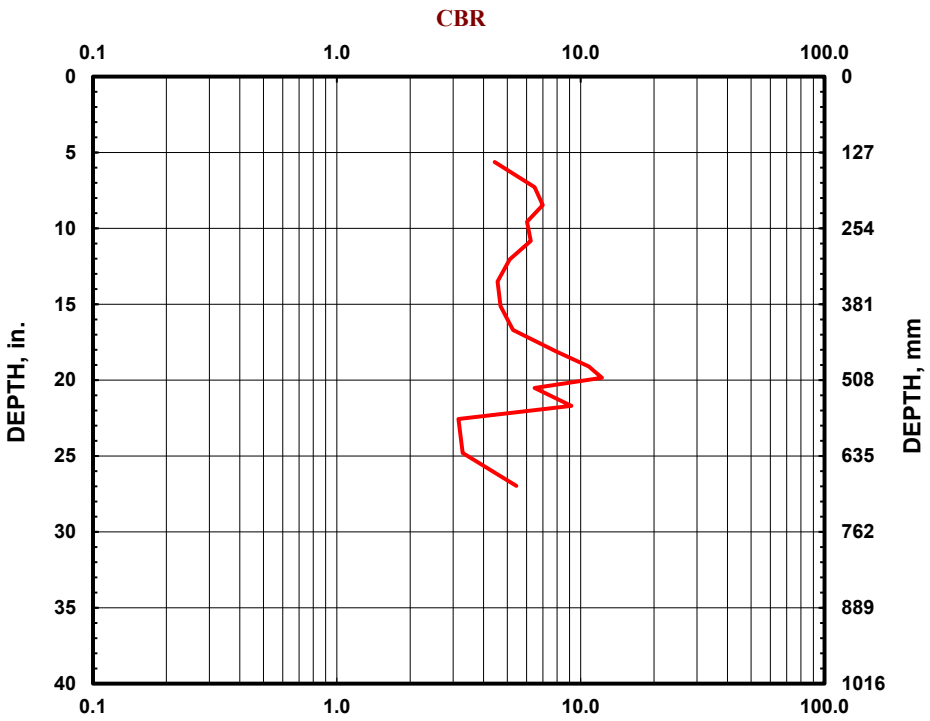
Project: *Siwanoy Elementary School* **Date:** 16-Feb-26

Location: Pelham, New York **Soil Type(s):** SW (Assumed)

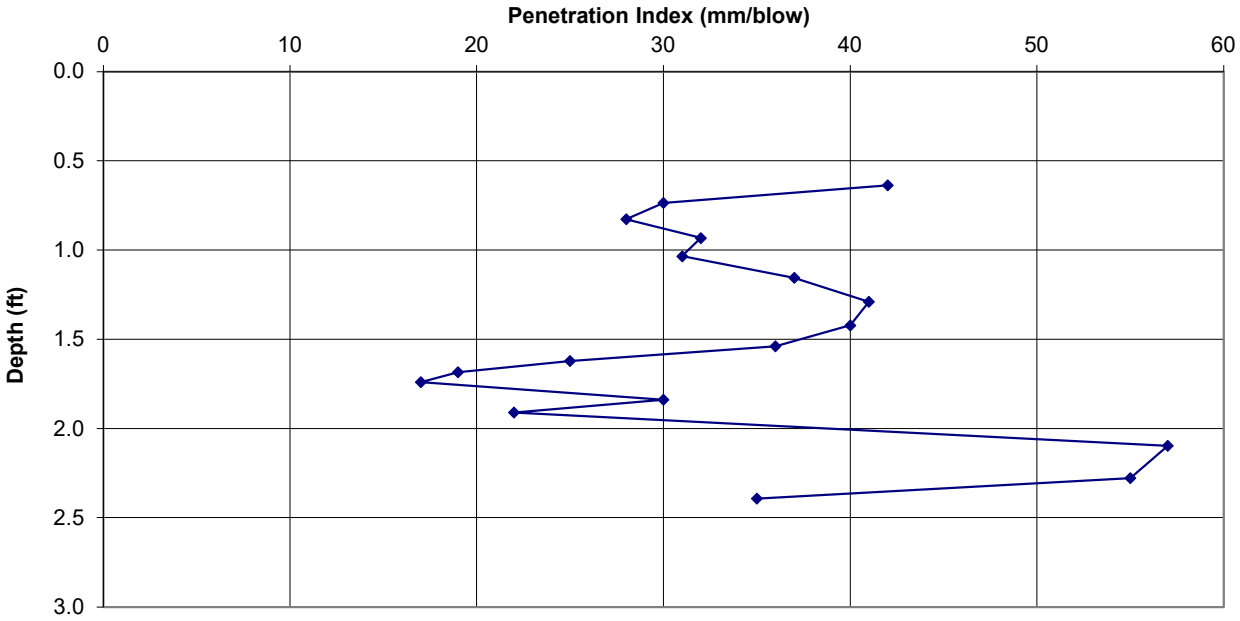
Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

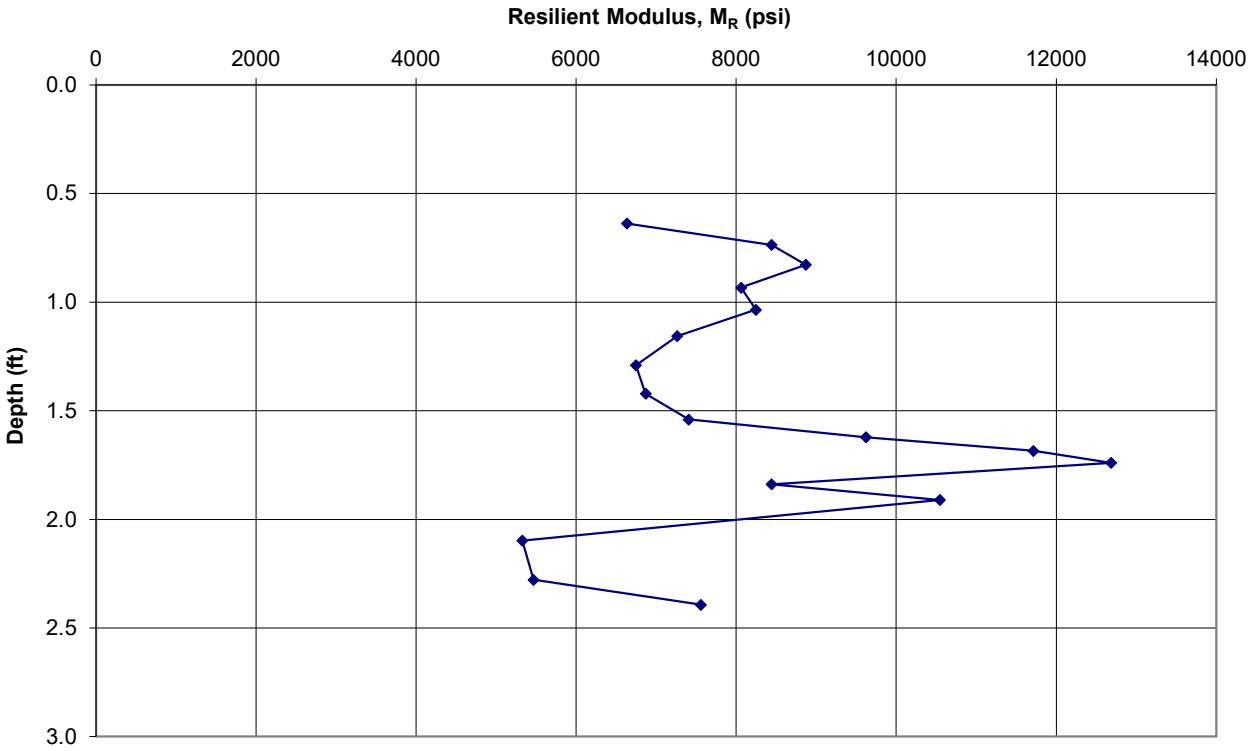
No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	143	1
1	185	1
1	215	1
1	243	1
1	275	1
1	306	1
1	343	1
1	384	1
1	424	1
1	460	1
1	485	1
1	504	1
1	521	1
1	551	1
1	573	1
1	630	1
1	685	1
1	720	1



B-4, DCP-4 - Penetration Index vs. Depth



B-4, DCP-4 - Resilient Modulus vs. Depth



DCP-5

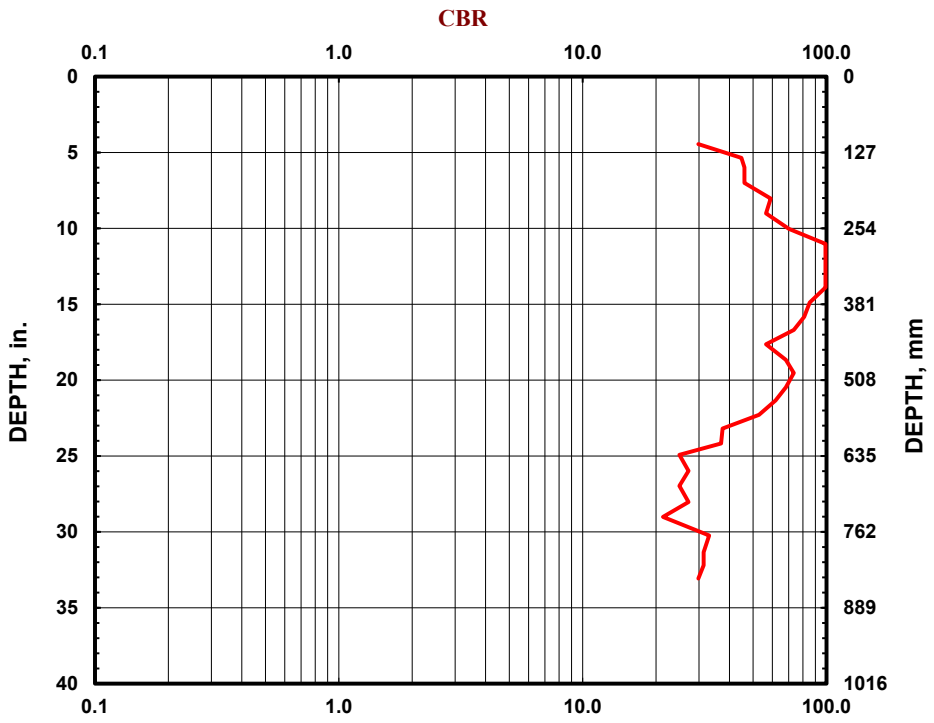
Project: *Siwanoy Elementary School* **Date:** 16-Feb-26

Location: Pelham, New York **Soil Type(s):** SW (Assumed)

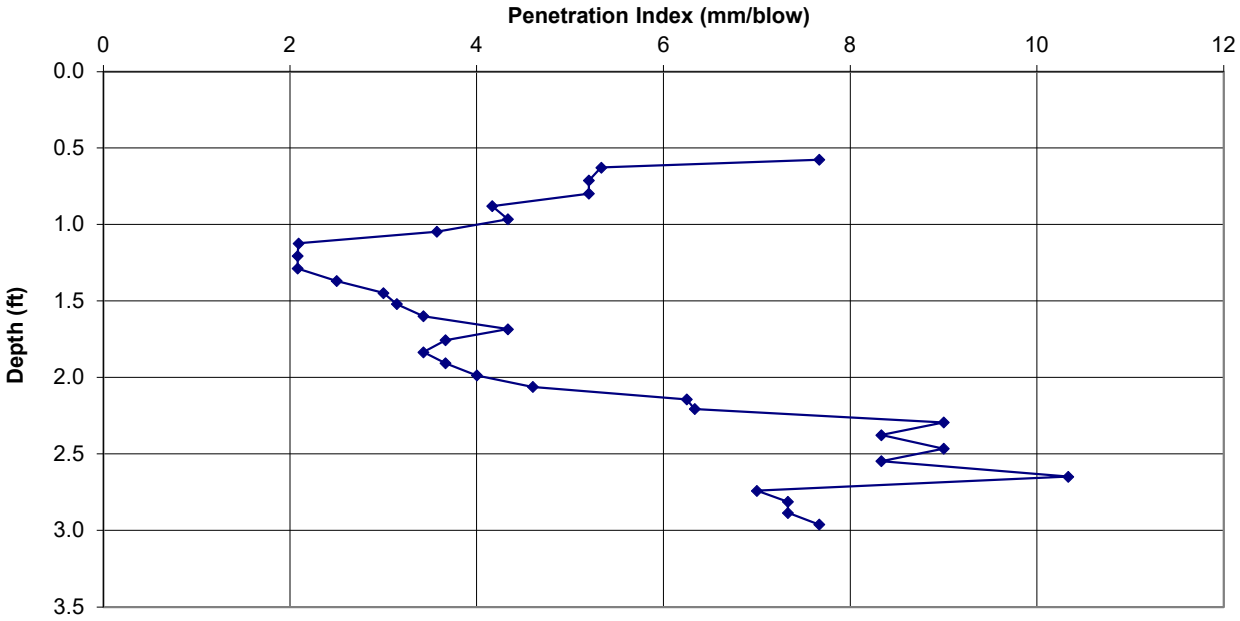
Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

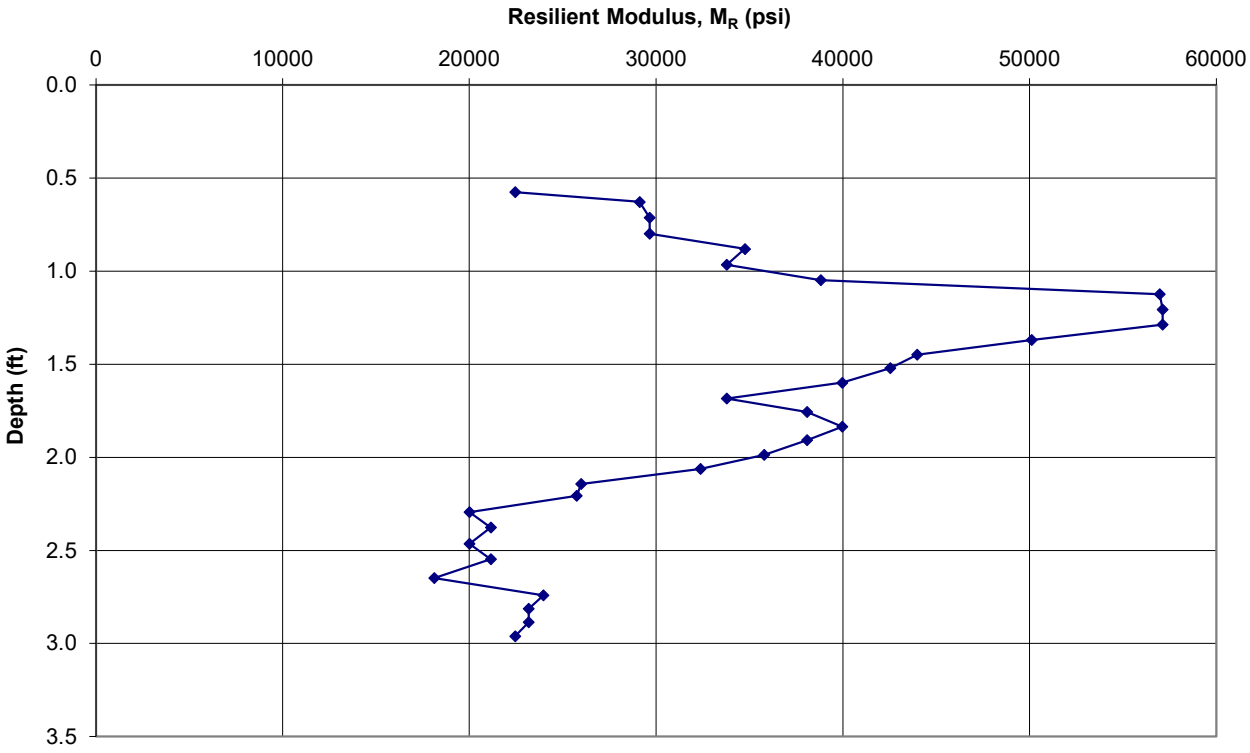
No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	113	1
3	136	1
3	152	1
5	178	1
5	204	1
6	229	1
6	255	1
7	280	1
11	303	1
12	328	1
12	353	1
10	378	1
8	402	1
7	424	1
7	448	1
6	474	1
6	496	1
7	520	1
6	542	1
6	566	1
5	589	1
4	614	1
3	633	1
3	660	1
3	685	1
3	712	1
3	737	1
3	768	1
4	796	1
3	818	1
3	840	1
3	863	1



B-5, DCP-5 - Penetration Index vs. Depth



B-5, DCP-5 - Resilient Modulus vs. Depth



GEO DESIGN

Appendix 4

Test Pit Logs

GEO DESIGN
Geotechnical | Construction | Environmental
Engineers and Scientists
984 Southford Road - Middlebury, CT
Telephone: (203) 758-8836 Fax: (203) 758-8842

TEST PIT LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Test Pit No.: TP-1
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

GeoDesign Rep: Matthew Hassiak
Weather: Clear
Date: February 19, 2026
Time Started: 01:00 PM Time Finished: 02:00 PM
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 42
Station: Offset: ft.

Contractor: JCM Services, Inc.
Operator: Raul
Make: CAT
Model: 303.5E
Capacity: 1 cu. yd
Reach: 11 ft

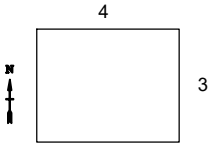
Groundwater Observations

Date	Depth (ft)	Elevation (ft)	Notes
▼ 2/19/26			Not encountered
▼			
▼			
▼			

Depth (feet)	Elevation & Depth (feet)	Test Pit Sketches & Strata Description (view to North)	Symbol	Excavation Effort	Boulder Count and Class	Moisture
1	41.6 0.4 41.0 1.0	Asphalt: 4.5" Brown, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, trace Concrete Fragments (Fill)		M	None	Moist
2		Light brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt (Natural)		M	5A	Moist
3				M	4A 1B	Moist
4				M	10A	Moist
5				M	6A	Moist
6				D	5A	Moist
7	35.0 7.0	*Light gray gneiss		D	7A 1B	Moist
8		Test Pit Refusal at 7.0 ft				
9						
10						
11						
12						
13						
14						
15						

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Test pit terminated at a depth of 7' due to refusal on apparent bedrock.
3. Test pit was backfilled with test pit spoils, placed in approximately 1' lifts and compacted with excavator bucket up to a depth of 3'. Remaining 3' of backfill was placed in 1' lifts and compacted using the Dynapac LT600C jumping jack.



Test Pit Plan (feet)

Notes:
1. Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
2. Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
3. Excavation Effort: E = Easy, M = Moderate, D = Difficult.
4. Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5. Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: TP-1

GEO DESIGN
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Engineers and Scientists
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TEST PIT LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Test Pit No.: TP-2
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

GeoDesign Rep: Matthew Hassiak
Weather: Clear
Date: February 19, 2026
Time Started: 08:00 AM Time Finished: 01:00 PM
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 44
Station: Offset: ft.

Contractor: JCM Services, Inc.
Operator: Raul
Make: CAT
Model: 303.5E
Capacity: 1 cu. yd
Reach: 11 ft

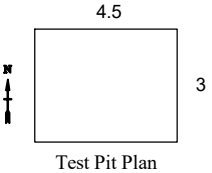
Groundwater Observations

Date	Depth (ft)	Elevation (ft)	Notes
▼ 2/19/26	N/A		Not encountered
▼			
▼			
▼			

Depth (feet)	Test Pit Sketches & Strata Description (view to North) — Elevation & Depth (feet)	Symbol	Excavation Effort	Boulder Count and Class	Moisture
1	Asphalt: 4" (0.3) Subbase: 3" (0.6) Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt, trace Concrete Fragments, trace Brick Fragments, trace Root Fibers, trace Metal Scrap (Fill)		E	None	Moist
2			E	None	Moist
3			E	None	Moist
4			E	None	Moist
5	39.5 4.5 Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt (Fill)		E	1A	Moist
6			E	None	Moist
7	37.0		M	None	Moist
8	7.0 Brown, fine to coarse SAND, some fine Gravel, little Silt, trace Brick Fragments (Fill) * Vitreous clay footing drain observed at 7' (diameter visually estimated to be approximately 3")		M	1A	Moist
9			M	None	Moist
10			M	None	Moist
11			M	1B	Moist
12	32.0		M	None	Moist
13	12.0 Bottom of Exploration at 12.0 ft				
14					
15					

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Test pit was backfilled with test pit spoils, placed in approximately 1' lifts and compacted with excavator bucket up to a depth of 3'. Remaining 3' of backfill was placed in 1' lifts and compacted using the Dynapac LT600C jumping jack.
3. Test pit terminated at maximum excavation depth of excavator. Existing building footing not observed above termination depth.



Test Pit Plan (feet)

Notes:
1. Water level readings have been made at times and under conditions stated, fluctuat`ions of groundwater may occur due to other factors than those present at the time readings were made.
2. Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
3. Excavation Effort: E = Easy, M = Moderate, D = Difficult.
4. Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5. Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: TP-2

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984 Southford Road - Middlebury, CT
Telephone: (203) 758-8836 Fax: (203) 758-8842

TEST PIT LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Test Pit No.: TP-3
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

GeoDesign Rep: Matthew Hassiak
Weather: Clear
Date: February 19, 2026
Time Started: 02:00 AM Time Finished: 03:30 AM
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 44
Station: Offset: ft.

Contractor: JCM Services, Inc.
Operator: Raul
Make: CAT
Model: 303.5E
Capacity: 1 cu. yd
Reach: 11 ft

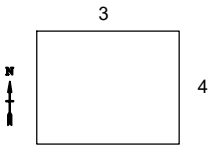
Groundwater Observations

Date	Depth (ft)	Elevation (ft)	Notes
▼ 2/19/26	N/A		Not encountered
▼			
▼			
▼			

Depth (feet)	Test Pit Sketches & Strata Description (view to North) — Elevation & Depth (feet)	Symbol	Excavation Effort	Boulder Count and Class	Moisture
1	Asphalt: 5-9"		E	1A	Moist
	43.2 / 0.8 Brown, fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, trace Brick Fragments, trace Root Fibers, trace Metel Scrap (Fill)				
2			M	7A	Moist
3			M	2A	Moist
4	40.5 *Apparent 3" thick concrete slab observed along the north and northeast sidewall of the excavation at 3.5' / 3.5		E	None	Moist
5	Light brown to orangish brown, fine to coarse SAND, little Silt, little fine to coarse Gravel, trace Root Fibers (Natural)		E	None	Moist
6			E	None	Moist
7			M	1A 1B	Moist
8	36.0		D	4A 2B	Moist
	8.0 Bottom of Exploration at 8.0 ft				
9					
10					
11					
12					
13					
14					
15					

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Test pit terminated at maximum excavation depth of excavator. Existing building footing not observed above termination depth.
3. Test pit was backfilled with test pit spoils, placed in approximately 1' lifts and compacted with excavator bucket up to a depth of 3'. Remaining 3' of backfill was placed in 1' lifts and compacted using the Dynapac LT600C jumping jack.



Test Pit Plan (feet)

Notes:
1. Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
2. Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
3. Excavation Effort: E = Easy, M = Moderate, D = Difficult.
4. Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5. Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: TP-3

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984 Southford Road - Middlebury, CT
Telephone: (203) 758-8836 Fax: (203) 758-8842

TEST PIT LOG

Project Name

Siwanoy Elementary School

Pelham, New York

Test Pit No.: TP-4
Page No.: 1 of 1
File No.: 5022-003
Checked By: TLC

GeoDesign Rep: Matthew Hassiak
Weather: Clear
Date: February 19, 2026
Time Started: 10:00 AM Time Finished: 11:30 AM
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 36
Station: Offset: ft.

Contractor: JCM Services, Inc.
Operator: Raul
Make: CAT
Model: 303.5E
Capacity: 1 cu. yd
Reach: 11 ft

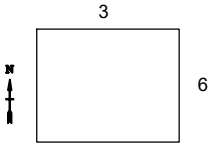
Groundwater Observations

Date	Depth (ft)	Elevation (ft)	Notes
▼ 2/19/26	N/A		Not encountered
▼			
▼			
▼			

Depth (feet)	Test Pit Sketches & Strata Description (view to North) — Elevation & Depth (feet)	Symbol	Excavation Effort	Boulder Count and Class	Moisture
1	Topsoil: 2" (0.2)		E	None	Moist
1	Light gray, fine Gravel (Fill) (0.4)		E	None	Moist
2	Brown, fine to coarse SAND, some fine to coarse Gravel, little Silt, trace Brick Fragments, trace Concrete Fragments, trace Metel Scrap (Fill)		E	1A	Moist
3			E	2A	Moist
4			E	2A	Moist
5	(31.0)		E	None	Moist
5	5.0 Light brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt (Natural)		E	None	Moist
6	* Vitreous clay footing drain observed at 6' (diameter visually estimated to be approximately 3")		E	None	Moist
7			E	None	Moist
8	* Top of footing at approximately 8' * Horizontal projection of footing from wall is approximately 1'		E	None	Moist
9	* Side of footing observed to be irregular and consistent with concrete poured "neat" (i.e.; directly against side of excavation without formwork).		E	None	Moist
10	26.0 * Bottom of footing observed at 10'				
10	10.0 Bottom of Exploration at 10.0 ft				
11					
12					
13					
14					
15					

Remarks

1. Ground surface elevation was interpolated from topographic contour lines shown on the available plans and is approximate.
2. Test pit was backfilled with test pit spoils, placed in approximately 1' lifts and compacted with excavator bucket up to a depth of 3'. Remaining 3' of backfill was placed in 1' lifts and compacted using the Dynapac LT600C jumping jack.



Test Pit Plan (feet)

Notes:
1. Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
2. Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
3. Excavation Effort: E = Easy, M = Moderate, D = Difficult.
4. Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5. Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: TP-4

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Appendix 5

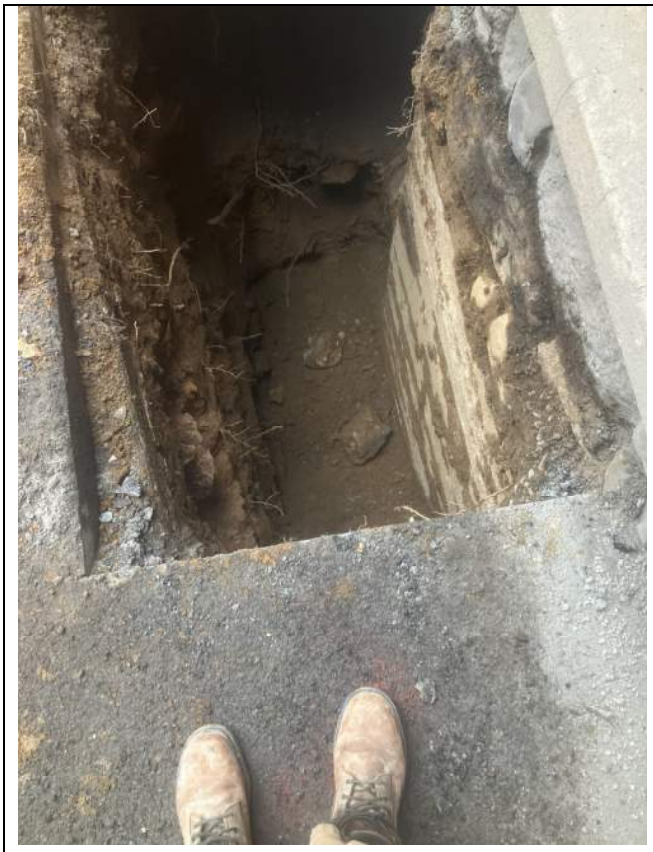
Test Pit Photolog

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New York, New York 10018
(212)-221-6651

Test Pit Exploration Photolog

	**Photograph No. 1:** View of Test Pit TP-1.
	**Photograph No. 2:** View of sidewall of Test Pit TP-1

	**Photograph No. 3:** View of Test Pit TP-2.
	**Photograph No. 4:** View of Test Pit TP-2.

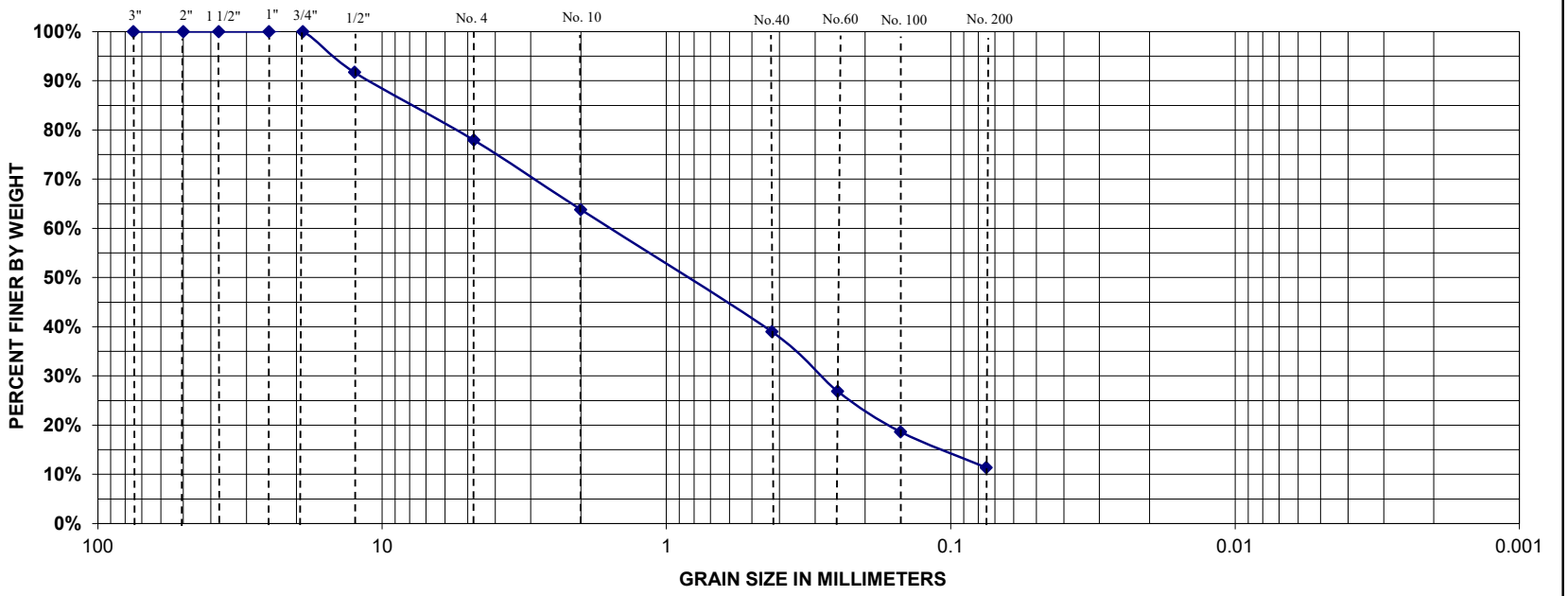
	**Photograph No. 5:** View Showing TP-3. Apparent concrete slab highlighted in red.
	**Photograph No. 6:** View showing Test Pit TP-3. Existing metal pipe highlighted in red.

	**Photograph No. 7:** View showing sidewall of Test Pit TP-4.
	**Photograph No. 8:** View showing Test Pit TP-4. Footing highlighted in red.

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Appendix 6

Laboratory Test Results



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

GRADATION TEST

Siwanoy Elementary School

BORING NO.	B-2
SAMPLE NO.	S-2
DEPTH	2-4'
TECH.	MTH
REVIEWER	TLC
DATE	02/27/26
FILE NO.	5022-003

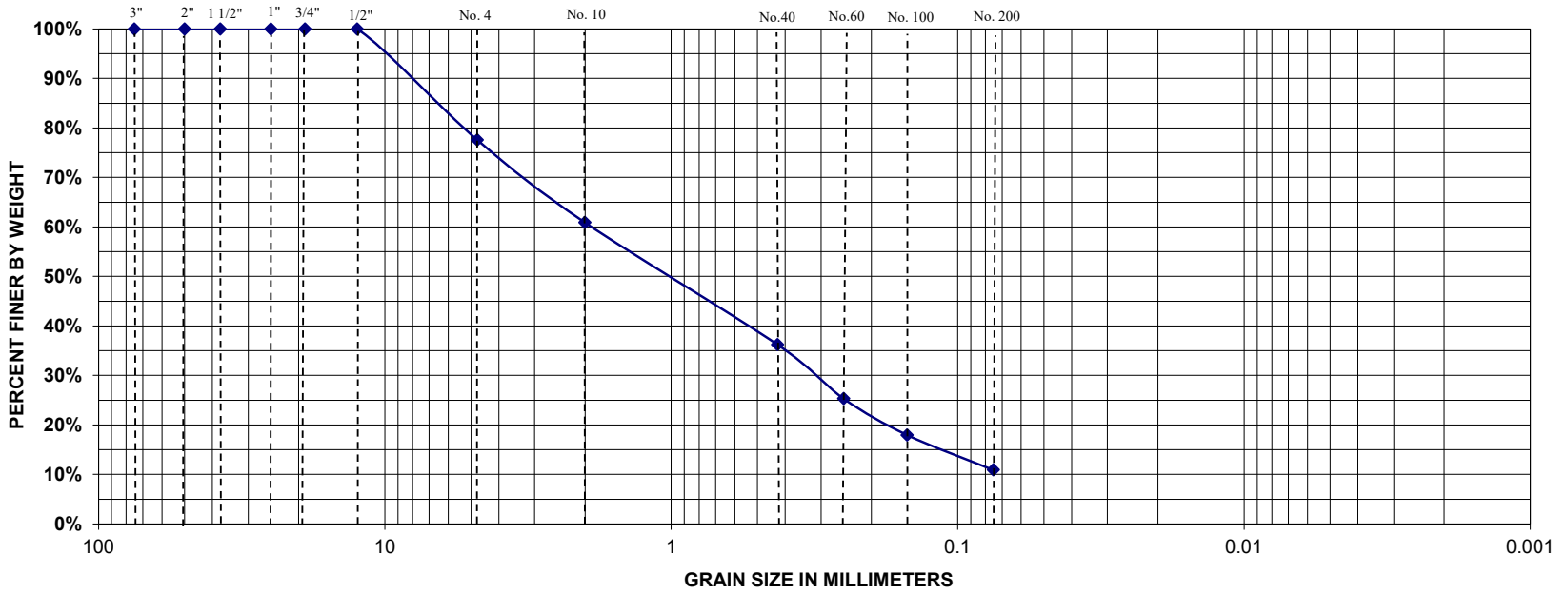
BURMISTER SOIL CLASSIFICATION SYSTEM

TEST NO.	MATERIAL SOURCE	DESCRIPTION	NATURAL MOISTURE CONTENT (%)
1 of 4	Sand and Gravel	Fine to coarse SAND, some (-) fine Gravel, little (-) Silt	13.8%

PARTICLE SIZE DISTRIBUTION

Material	Percent by Weight
Cobbles	0
Coarse Gravel	0.0
Fine Gravel	22.1
Coarse Sand	14.1
Medium Sand	24.8
Fine Sand	27.6
Fines	11.4

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

GRADATION TEST

Siwanoy Elementary School

BORING NO.	B-5
SAMPLE NO.	S-3
DEPTH	4-6'
TECH.	MTH
REVIEWER	TLC
DATE	02/27/26
FILE NO.	5022-003

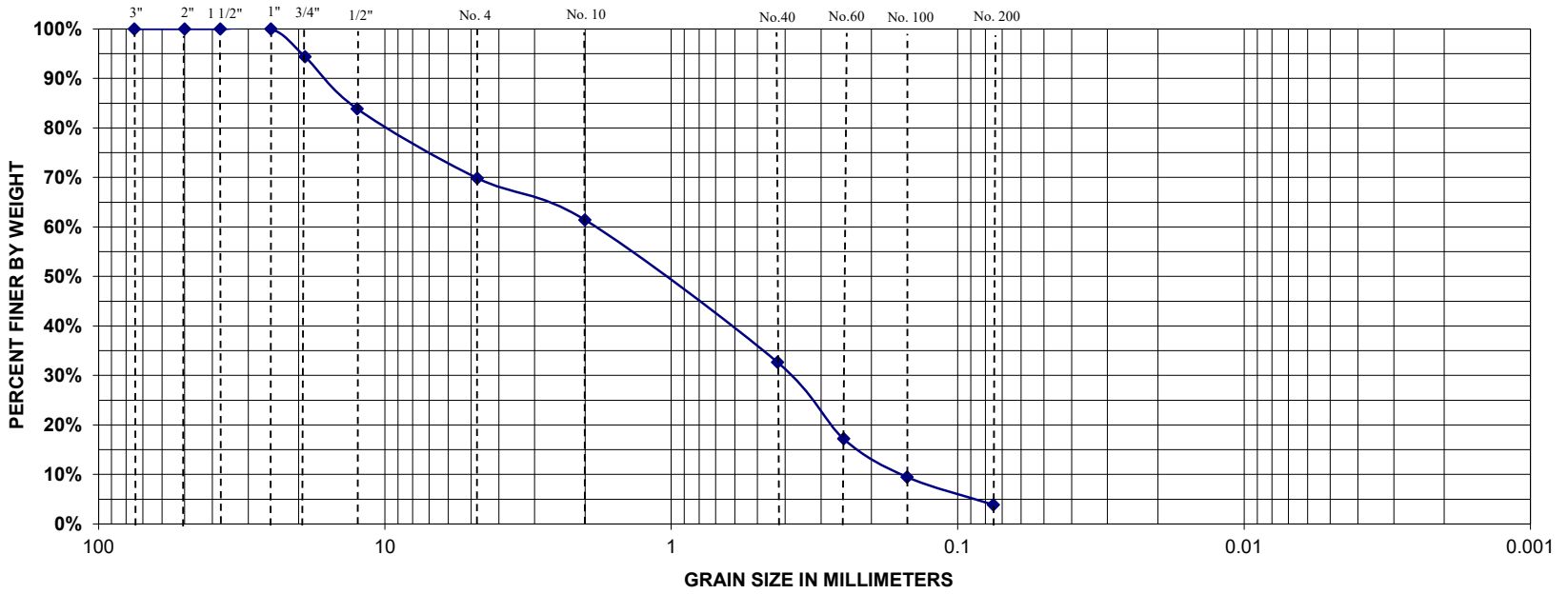
BURMISTER SOIL CLASSIFICATION SYSTEM

TEST NO.	MATERIAL SOURCE	DESCRIPTION	NATURAL MOISTURE CONTENT (%)
4 of 4	Fill	Fine to coarse SAND, some (-) fine Gravel, little (-) Silt	14.7%

PARTICLE SIZE DISTRIBUTION

Material	Percent by Weight
Cobbles	0
Coarse Gravel	0.0
Fine Gravel	22.4
Coarse Sand	16.7
Medium Sand	24.7
Fine Sand	25.3
Fines	10.9

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

GRADATION TEST

Siwanoy Elementary School

BORING NO.	SB-1
SAMPLE NO.	S-4
DEPTH	6-8'
TECH.	MTH
REVIEWER	TLC
DATE	02/27/26
FILE NO.	5022-003

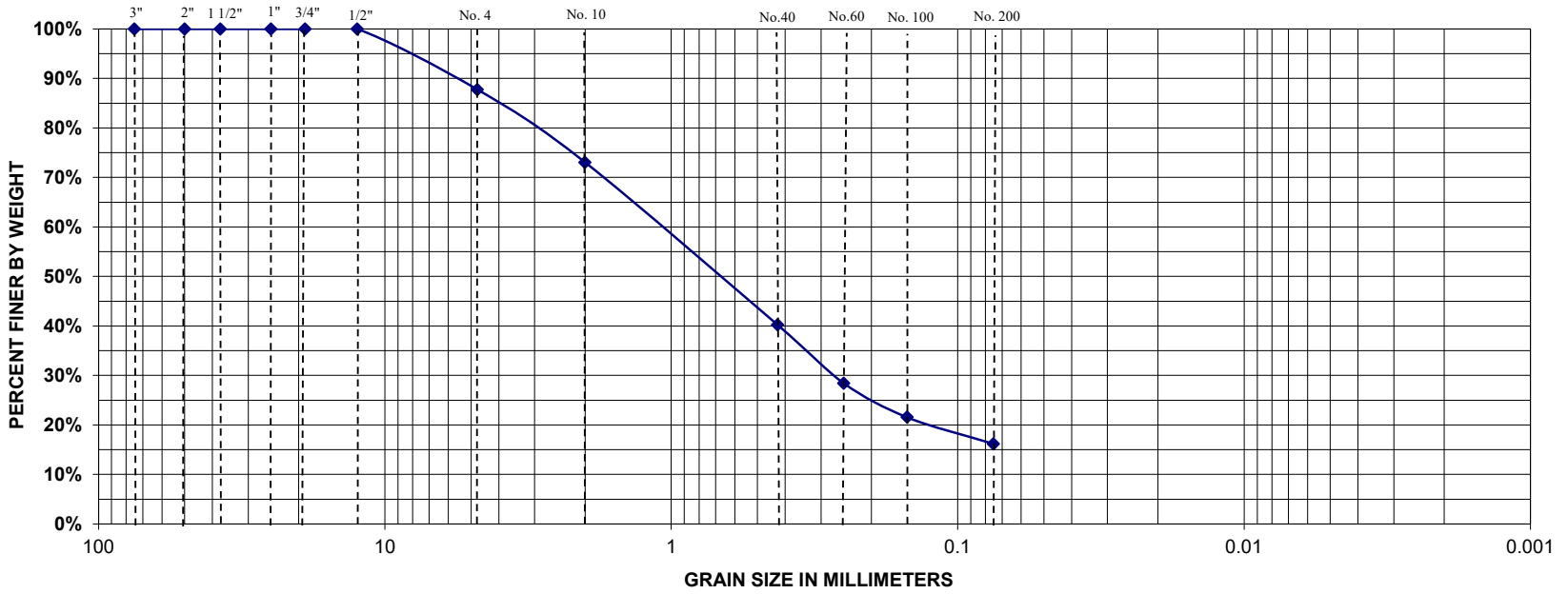
BURMISTER SOIL CLASSIFICATION SYSTEM

TEST NO.	MATERIAL SOURCE	DESCRIPTION	NATURAL MOISTURE CONTENT (%)
2 of 4	Sand and Gravel	Fine to coarse SAND, some fine to coarse Gravel, trace Silt	12.6%

PARTICLE SIZE DISTRIBUTION

Material	Percent by Weight
Cobbles	0
Coarse Gravel	5.6
Fine Gravel	24.6
Coarse Sand	8.4
Medium Sand	28.8
Fine Sand	28.8
Fines	3.9

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

GRADATION TEST

Siwanoy Elementary School

BORING NO.	SB-2
SAMPLE NO.	S-2
DEPTH	2-4'
TECH.	MTH
REVIEWER	TLC
DATE	02/27/26
FILE NO.	5022-003

BURMISTER SOIL CLASSIFICATION SYSTEM

TEST NO.	MATERIAL SOURCE	DESCRIPTION	NATURAL MOISTURE CONTENT (%)
3 of 4	Fill	Fine to coarse SAND, little Silt, little fine Gravel	12.7%

PARTICLE SIZE DISTRIBUTION

Material	Percent by Weight
Cobbles	0
Coarse Gravel	0.0
Fine Gravel	12.3
Coarse Sand	14.7
Medium Sand	32.8
Fine Sand	24.0
Fines	16.2

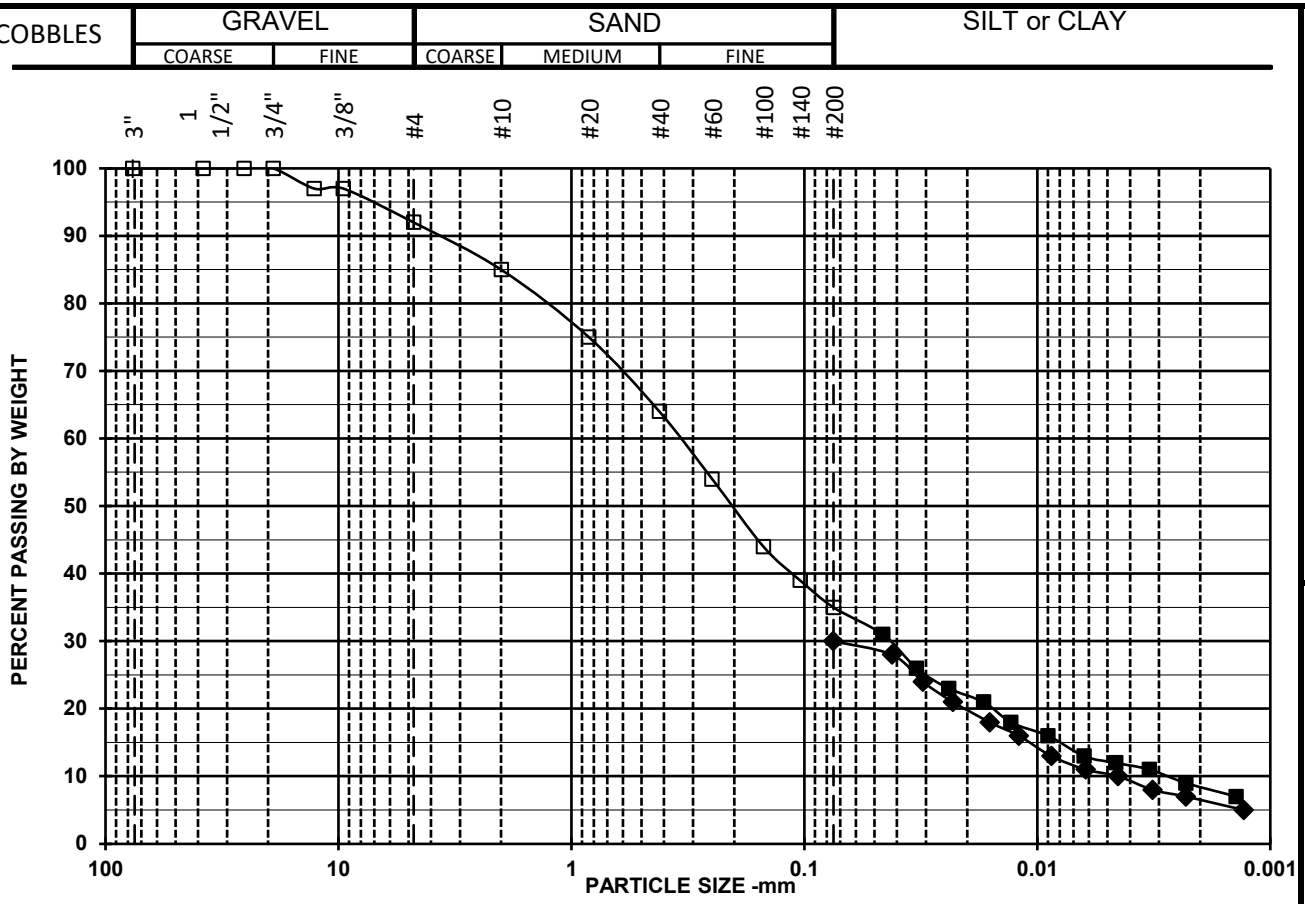
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GeoDesign #5022-003
Siwanoy Elementary School - Pelham, NY

SOIL LABORATORY TESTING SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS				REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	HYDRO. % MINUS 2 μm (%)	
B-1	S-2	2-4	14.4	SC	35	8	
B-2	S-2	2-4		SM	30	7	
B-4	S-5	8-10	21.8	SC	30	7	
B-5	S-3	4-6		SM	15	3	

Note: (1) USCS symbol based on visual observation and Sieve reported.



Open Symbols: Sieve analysis by ASTM D6913
Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	14.4				SC		Brown, Clayey sand, Insufficient sample size	03/13/26
◇					SM		Brown, Silty sand with gravel, Insufficient sample size	03/13/26
○								

GeoDesign #5022-003

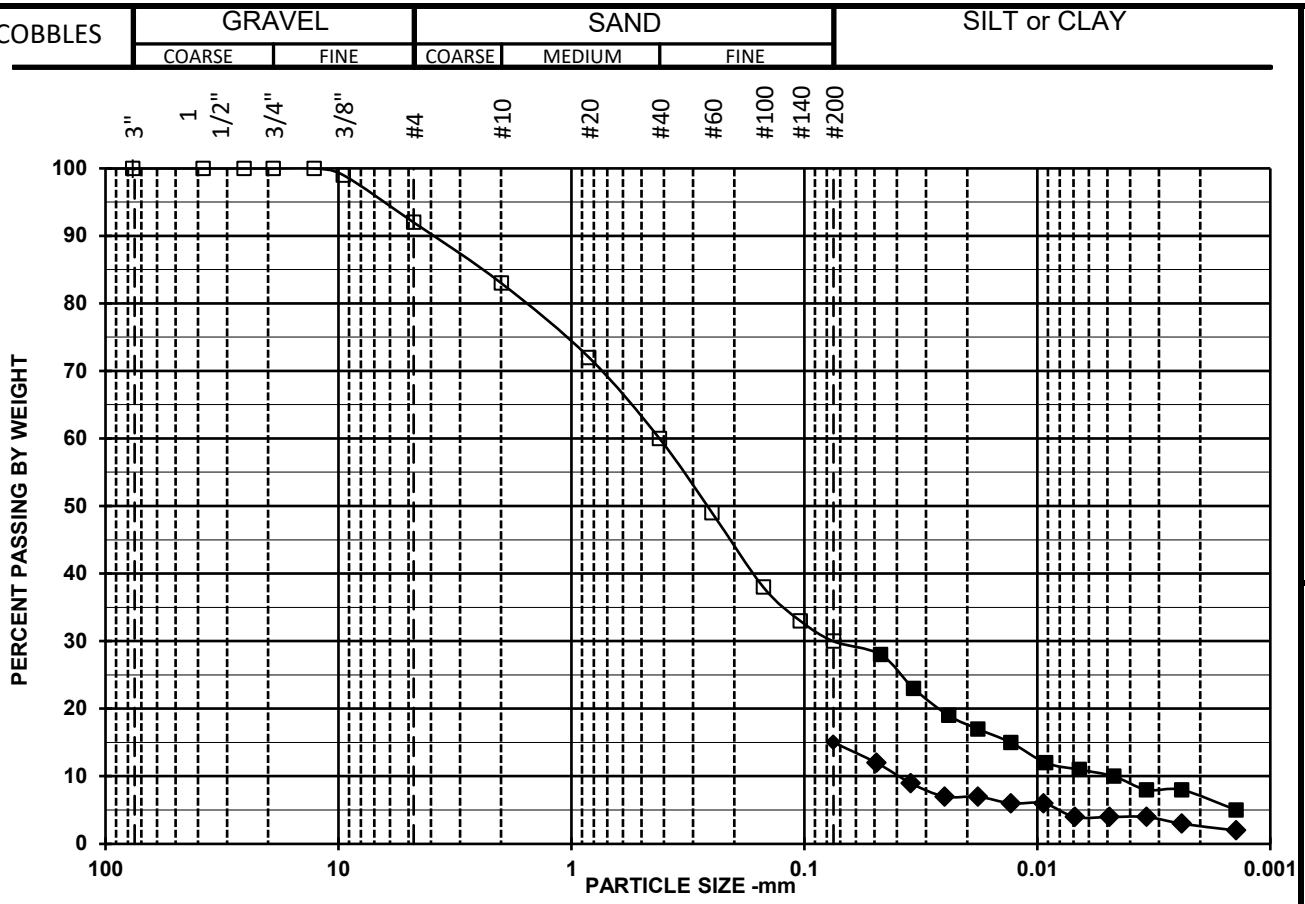
TERRASENSE Geotechnical Laboratory #26005237A

Siwanoy Elementary School
Pelham, NY

Symbol	□	◇	○
Boring	B-1	B-2	
Sample	S-2	S-2	
Depth	2-4	2-4	
% +3"	0		
% Gravel	8		
% SAND	57		
%C SAND	7		
%M SAND	21		
%F SAND	29		
% FINES	35	30	
D_{100} (mm)	19.1		
D_{60} (mm)	0.34		
D_{30} (mm)	0.043	0.075	
D_{10} (mm)	0.003	0.005	
Cc	1.9		
Cu	121.4		

Sieve Size/ID #	Percent Finer Data		
6"	100		
4"	100		
3"	100		
1 1/2"	100		
1"	100		
3/4"	100		
1/2"	97		
3/8"	97		
#4	92		
#10	85		
#20	75		
#40	64		
#60	54		
#100	44		
#140	39		
#200	35	30	
5μ m	12	10	
2μ m	8	7	
1μ m	6	4	

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928



Open Symbols: Sieve analysis by ASTM D6913
Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	21.8				SC		Gray, Clayey sand	03/13/26
◇					SM		Brown, Silty sand with gravel	03/13/26
○								

GeoDesign #5022-003

TERRASENSE Geotechnical Laboratory #26005237A

Siwanoy Elementary School
Pelham, NY

Symbol	□	◇	○
Boring	B-4	B-5	
Sample	S-5	S-3	
Depth	8-10	4-6	
% +3"	0		
% Gravel	8		
% SAND	62		
%C SAND	9		
%M SAND	23		
%F SAND	30		
% FINES	30	15	
D_{100} (mm)	12.7	12.7	
D_{60} (mm)	0.419		
D_{30} (mm)	0.075		
D_{10} (mm)	0.005	0.039	
Cc	2.9		
Cu	89.1		

Sieve Size/ID #	Percent Finer Data		
6"	100		
4"	100		
3"	100		
1 1/2"	100		
1"	100		
3/4"	100		
1/2"	100		
3/8"	99		
#4	92		
#10	83		
#20	72		
#40	60		
#60	49		
#100	38		
#140	33		
#200	30	15	
5μ m	10	4	
2μ m	7	3	
1μ m	3	1	

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928

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Appendix 7

Backfill and Compaction Criteria

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New York, NY 10018
(203)-758-8842

BACKFILL AND COMPACTION CRITERIA

All soil backfill material gradations should be determined in accordance with ASTM D 6913. All backfill materials shall be uniformly graded material from approved sources and free from ice, snow, roots, sod, loam, rubbish, and other deleterious or organic matter meeting the following gradation requirements:

Ordinary Fill – *Recommended for use as fill or backfill where other materials are not specified shall be friable, non-plastic, inorganic soil:*

Sieve Size	Percent finer by Weight
2/3 Lift Thickness	100
No. 200	35

Structural Fill – *Recommended for use in over-excavated areas and other applications as detailed in the Geotechnical Report.*

Sieve Size	Percent finer by Weight
6 inch	100
No. 10	30-95
No. 40	10-70
No. 200	5-15

Select Fill - *Recommended for use as backfill behind walls and elsewhere that requires free-draining or non-frost susceptible material.*

Sieve Size	Percent finer by Weight
6 inch	100
No. 10	30-95
No. 40	10-70
No. 200	5-10

Crushed Stone - *May be used as backfill in lieu of Structural Fill. Crushed Stone should be enveloped in nonwoven geotextile when placed against other soils. Crushed Stone should be used in lieu of Structural or Select Fill when working below the water table.*

Sieve Size	Percent finer by Weight
1 ½	100
1 inch	90-100
1/2 inch	0-15

Subbase shall meet the requirements of "Type 1" subbase from NYSDOT Standard Specification 304-2, with gradation requirements from NYSDOT Table 733-04A.

Nonwoven Geotextile

The nonwoven geotextile placed around crushed stone should meet the following criteria:

Property	Criteria	Test Method
Grab Tensile Strength (lbs.)	min. 120	ASTM D4632
Grab Tensile Elongation (%)	min. 50	ASTM D4632
CBR Puncture Strength (lbs.)	min. 310	ASTM D6241
Trapezoid Tear (lbs.)	min. 50	ASTM D4533
Apparent Opening Size	No. 70 U.S. Sieve Size	ASTM D4751

Fabric should be needle-punched nonwoven material. Seams should be overlapped a minimum of 12 inches. During stone placement, the stone drop height should not exceed 3 feet and equipment traffic should be kept off the fabric until at least 6 to 12 inches of material is placed.

Placement and Compaction of Backfill Material

The required degree of compaction shall be based on a maximum dry density as determined by ASTM Test D1557. The degree of compaction for fill placed in various areas shall be as follows:

Placement Areas	Minimum Degree of Compaction
1. Below foundations, slabs, and asphalt	95%
4. Above bottom of foundations	95%
5. Behind foundation walls	92%
5. Landscaped areas	90%

Materials should be placed within 3% of optimum moisture content. Maximum loose lift thickness for fill and the minimum number of passes of compaction equipment are summarized below.

Compaction Method	Maximum Stone Size (in.)	Maximum Loose Lift Thickness (in.)		Minimum Number of Passes	
		Below Structures and Pavement	Less Critical Areas	Below Structures and Pavement	Less Critical Areas
Hand-operated vibratory plate or light roller in confined areas	4	6	8	6	4
Hand-operated vibratory drum rollers weighing at least 1,000#	6	8	10	6	4
Light vibratory drum roller, minimum dynamic force 3,000# per ft. of drum width	6	10	14	6	4
Medium vibratory drum roller, minimum dynamic force 5,000# per ft. of drum width	8	12	18	6	4
Large vibratory drum roller, minimum dynamic force 8,000# per ft. of drum width	10	16	24	6	4

We recommend that equipment used for the compaction of structural backfill within 5 feet behind retaining walls be limited to hand-operated vibratory plates.

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Appendix 8

Limitations

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Middlebury, CT 06762
(203) 758-8836

Geotechnical Limitations

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

3. Water level readings and moisture conditions have been made in the explorations, and from the samples at times and under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater and moisture condition may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed structures is planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by GEODesign, Inc. We recommend that we be provided the opportunity to review and comment on the finalized project design and relevant construction specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Use of Report

5. This report has been prepared for the exclusive use of Client, for specific application to the project, as described in GEODesign's scope of services/ contract and related documents, in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

6. This report has been prepared for this specific project by GEODesign, Inc. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only, unless otherwise specified in the report.

7. Unless otherwise noted, the scope of our services did not include environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, surface water, groundwater or air, on, below, or around this site.

_____
(Name of Bidder)

BID FORM CONTRACT NO. 1 - GENERAL CONSTRUCTION WORK
FOR
ADDITIONS AND ALTERATIONS AT SIWANOY ELEMENTARY SCHOOL

Pelham Union Free School District
Business Office
314 Pelhamdale Avenue
Pelham, New York 10803
Attention: James Hricay, Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.

2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.

3. In submitting this Bid, the Undersigned agrees:

   a. To hold the Bid open for forty-five (45) days after Bid Opening.
   b. To accept the provisions of the Instructions to Bidders.
   c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
   d. To commence the Work immediately upon receipt of Notice of Award.

4. The Undersigned agrees that the Work proposed herein will be Substantially Complete on or before the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.

5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.

6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____
_____	_____

_____
(Name of Bidder)

7. **BASE BID**

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications for General Construction Work:

$ _____ (In numbers)

_____ Dollars
(in words)

8. **ALTERNATES**

The Undersigned agrees to provide all work in accordance with the requirements of the Specifications and the Drawings and includes all costs of related coordination, modification, or adjustment for the following:

ALTERNATE NO. 1: MASONRY FACADE-RELATED WORK

ADD _____ Dollars ($ _____)

ALTERNATE NO. 2: ENTRY STAIR STABILIZATION WORK

ADD _____ Dollars ($ _____)

ALTERNATE NO. 3: ADDITIONAL KITCHEN EQUIPMENT

ADD _____ Dollars ($ _____)

.

ALTERNATE NO. 4: PICNIC AREA

ADD _____ Dollars ($ _____)

ALTERNATE NO. 5: SEAT WALL AT K-2 PLAYGROUND

ADD _____ Dollars ($ _____)

ALTERNATE NO. 6: SHADE SAIL STRUCTURE

ADD _____ Dollars ($ _____)

.

ALTERNATE NO. 7: INCLUSIVE PLAYGROUND

ADD _____ Dollars ($ _____)

ALTERNATE NO. 8: GYMNASIUM WALL PADS

ADD _____ Dollars ($ _____)

(Name of Bidder)

ALTERNATE NO. 9: ACOUSTIC WALL PANELS AP-1 IN CAFETERIA

ADD _____ Dollars ($_____)

ALTERNATE NO. 10: SOLAR PANELS ON THE ROOF OF THE ADDITION

ADD _____ Dollars ($_____)

9. **UNIT PRICES**

The Undersigned agrees to perform all work as drawn and specified for the following items at the unit prices given:

Unit Price No. 1 - Rock Removal and Disposal, Trench Excavation: All work required for rock removal and disposal at trench excavations for the unit price per cubic yard:

_____ Dollars ($ _____)

Unit Price No. 2 - Rock Removal and Disposal, Mass Excavation: All work required for rock removal and disposal at mass excavations for the unit price per cubic yard:

_____ Dollars ($ _____)

Unit Price No. 3 - Abatement Work Re-Mobilization (Small Containment Areas) Outside of Base Bid Work: All work required for small containment preparation to enclose small abatement areas less than 60 SF or 260 LF for the unit price per occurance of:

_____ Dollars ($ _____)

Unit Price No. 4 - Abatement Work Re-Mobilization (Large Containment Areas) Outside of Base Bid Work: All work required for large containment preparation to enclose large abatement areas greater than 60 SF or 260 LF for the unit price per occurance of:

_____ Dollars ($ _____)

Unit Price No. 5 - Abatement of Plaster Ceilings: All work required for abatement of existing plaster ceilings for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 6 - Abatement of Floor Tile and Underlying Mastic: All work required for abatement of existing floor tile with underlying mastic for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 7 - Abatement of Wall Base and Underlying Mastic: All work required for abatement of existing wall base with underlying mastic for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 8 - Abatement of Thermal System Insulation (TSI): All work required for abatement of ACM pipe insulation and fittings for the unit price per linear foot of:

_____ Dollars ($ _____)

Unit Price No. 9 - Abatement of Waterproofing Behind Walls and Under Bathroom Floors: All work required for abatement of waterproofing behind walls and under bathroom floors for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 10 - Abatement of Waterproofing Behind Brick or Below Grade: All work required for abatement of waterproofing behind brick or below grade for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 11- Abatement of Concealed Under Slab Waterproofing Barrier: All work required for abatement of concealed under slab waterproofing barrier for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 12- Abatement of Concealed Mastic Behind Tackboards/Whiteboards: All work required for abatement of concealed mastic behind tackboards/whiteboardsfor the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 13 - Clean Brick Masonry (Mark BC): All work required for brick masonry cleaning (remove efflorescence) for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 14 - Clean Cast Stone (Mark C): All work required for cast stone cleaning (remove rust) for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 15 - Clean and Coat Lintels (Mark LC): All work required for cleaning and coating lintels for the unit price per linear foot of:

_____ Dollars ($ _____)

_____
(Name of Bidder)

Unit Price No. 16 - Brick Removal and Replacement (Mark MR): All work required for removing and replacing existing bricks for the unit price per each brick of:

_____ Dollars ($ _____)

Unit Price No. 17 - Patch Stone (Mark PS): All work required for patching stone for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 18 - Brick Repointing (Mark RB): All work required for repointing existing brickwork for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 19 - Dimension Stone Repointing (Mark RD): All work required for repointing existing dimension stone for the unit price per linear foot of:

_____ Dollars ($ _____)

Unit Price No. 20 - Rubble Stone Repointing (Mark RR): All work required for repointing existing rubble stone for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 21 - Cast Stone Replacement (Mark RS): All work required for replacing existing cast stone for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 22 - Repair Stone Cracks (Mark SC): All work required for repairing cracks in stone for the unit price per linear foot of:

_____ Dollars ($ _____)

Unit Price No. 23 - Replace Sealant (Mark SR): All work required for replacing sealant for the unit price per linear foot of:

_____ Dollars ($ _____)

Unit Price No. 24 - ACT and Grid Replacement: All work required for removal of existing ceiling system and replacement with ACT-1 and grid at ceiling for the unit price per two hundred fifty (250) square feet of:

_____ Dollars ($ _____)

Unit Price No. 25 - New Vinyl Composition Tile Floor Tile: All work required for providing new VCT floor tile including cement underlayment for the unit price per square foot of:

_____ Dollars ($ _____)

Unit Price No. 26 - Removal and Disposal of Contaminated Soils: All work required for removal and disposal of contaminated soils for the unit price per cubic yard:

_____ Dollars ($ _____)

Unit Price No. 27 - Clean Backfill: All work required for providing clean backfill for the unit price per cubic yard:

_____ Dollars ($ _____)

Unit Price No. 28 - Not applicable.

10. **ALLOWANCES**

The Undersigned has included the following allowances in the Base Bid amount stated above:

ALLOWANCE NO. 1, Contingency Allowance: $200,000.00
ALLOWANCE NO. 2, Quantity Allowance: 15 cu. yd of rock removal and disposal, trench excavation
ALLOWANCE NO. 3, Quantity Allowance: 200 cu. yd of rock removal and disposal, mass excavation
:

The Undersigned has attached the following documents to this Bid:

a. Certificate of Compliance with the Iran Divestment Act
b. Non-Collusion Affidavit
c. Sexual Harassment Policy and Training Certification
d. Bid Security
e. Statement of Bidder's Qualifications AIA Document A305, including Exhibits A, B, C, and D.
f. Labor Law 220-i Certification Form
g. Certificate(s) of Registration with the NYSDOL as required by NY Labor Law Section 220-i

_____ (If corporation, affix
Legal name of person, partnership, joint venture, limited liability company, or corporation (please type) corporate seal)

_____
Address (please type)

_____
(Name of Bidder)

_____
Federal ID No. or Social Security No. (please type)

_____
Phone No. (please type)

_____
E-mail address - general for company (please type)

_____
Company URL (please type)

_____
Name and title of signer (please type)

_____ _____
Signature Date

If a Corporation
Name Address

_____ , PRESIDENT _____

_____ , SECRETARY _____

_____ , TREASURER _____

If a Partnership
Name of Partners Address

_____ _____

_____ _____

_____ _____

If a Joint Venture
Name of Members Address

_____ _____

_____ _____

_____ _____

If an Individual
Name of Individual Address

_____ _____

_____
(Name of Bidder)

If a Limited Liability Company (LLC)

Name of Members	Address

IF AWARDED THE CONTRACT:

_____
Contract Signatory (name and title)

_____
Project Manager (name, e-mail address and cell phone number)

_____
(Name of Bidder)

BID FORM CONTRACT NO. 2 - PLUMBING WORK
FOR
ADDITIONS AND ALTERATIONS AT SIWANOY ELEMENTARY SCHOOL

Pelham Union Free School District
Business Office
314 Pelhamdale Avenue
Pelham, New York 10803
Attention: James Hricay, Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.

2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.

3. In submitting this Bid, the Undersigned agrees:

   a. To hold the Bid open for forty-five (45) days after Bid Opening.
   b. To accept the provisions of the Instructions to Bidders.
   c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
   d. To commence the Work immediately upon receipt of Notice of Award.

4. The Undersigned agrees that the Work proposed herein will be Substantially Complete on or before the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.

5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.

6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____
_____	_____

_____
(Name of Bidder)

7. **BASE BID**

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications for Plumbing Work:

$_____ (In numbers)

_____ Dollars
(in words)

8. **ALTERNATES** - None

9. **UNIT PRICES** - None

10. **ALLOWANCES**

The Undersigned has included the following allowance in the Base Bid amount stated above:

ALLOWANCE NO. 1, Contingency Allowance: $25,000.00
ALLOWANCE NO. 2, Quantity Allowance: Not applicable
ALLOWANCE NO. 3, Quantity Allowance: Not applicable

The Undersigned has attached the following documents to this Bid:

a. Certificate of Compliance with the Iran Divestment Act
b. Non-Collusion Affidavit
c. Sexual Harassment Policy and Training Certification
d. Bid Security
e. Statement of Bidder's Qualifications AIA Document A305, including Exhibits A, B, C, and D.
f. Labor Law 220-i Certification Form
g. Certificate(s) of Registration with the NYSDOL as required by NY Labor Law Section 220-i

_____ (If corporation, affix
Legal name of person, partnership, joint venture, limited liability company, or corporation (please type) corporate seal)

_____
Address (please type)

_____
Federal ID No. or Social Security No. (please type)

_____
Phone No. (please type)

_____
(Name of Bidder)

_____
E-mail address - general for company (please type)

_____
Company URL (please type)

_____
Name and title of signer (please type)

_____ _____
Signature Date

If a Corporation
Name Address

_____ , PRESIDENT _____

_____ , SECRETARY _____

_____ , TREASURER _____

If a Partnership
Name of Partners Address

_____ _____

_____ _____

_____ _____

If a Joint Venture
Name of Members Address

_____ _____

_____ _____

_____ _____

If an Individual
Name of Individual Address

_____ _____

If a Limited Liability Company (LLC)
Name of Members Address

_____ _____

_____ _____

_____ _____

_____

(Name of Bidder)

IF AWARDED THE CONTRACT:

_____

Contract Signatory (name and title)

_____

Project Manager (name, e-mail address and cell phone number)

_____
(Name of Bidder)

BID FORM CONTRACT NO. 3 - HVAC WORK
FOR
ADDITIONS AND ALTERATIONS AT SIWANOY ELEMENTARY SCHOOL

Pelham Union Free School District
Business Office
314 Pelhamdale Avenue
Pelham, New York 10803
Attention: James Hricay, Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.

2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.

3. In submitting this Bid, the Undersigned agrees:

   a. To hold the Bid open for forty-five (45) days after Bid Opening.
   b. To accept the provisions of the Instructions to Bidders.
   c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
   d. To commence the Work immediately upon receipt of Notice of Award.

4. The Undersigned agrees that the Work proposed herein will be Substantially Complete on or before the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.

5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.

6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____
_____	_____

_____
(Name of Bidder)

7. **BASE BID**

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications for HVAC Work:

$ _____ (In numbers)

_____ Dollars
(in words)

8. **ALTERNATES** - none

9. **UNIT PRICES**

The Undersigned agrees to perform all work as drawn and specified for the following items at the unit prices given:

Unit Price No. 1 - 27: Not applicable

Unit Price No. 28 - Dispose of Existing Fuel Oil and Sludge: All work required for disposing of existing fuel oil and sludge for the unit price per gallon:

_____ Dollars ($ _____)

10. **ALLOWANCES**

The Undersigned has included the following allowance in the Base Bid amount stated above:

ALLOWANCE NO. 1, Contingency Allowance: $100,000.00
ALLOWANCE NO. 2, Quantity Allowance: Not applicable
ALLOWANCE NO. 3, Quantity Allowance: Not applicable

The Undersigned has attached the following documents to this Bid:

a. Certificate of Compliance with the Iran Divestment Act
b. Non-Collusion Affidavit
c. Sexual Harassment Policy and Training Certification
d. Bid Security
e. Statement of Bidder's Qualifications AIA Document A305, including Exhibits A, B, C, and D.
f. Labor Law 220-i Certification Form
g. Certificate(s) of Registration with the NYSDOL as required by NY Labor Law Section 220-i

(Name of Bidder)

(If corporation, affix corporate seal)

Legal name of person, partnership, joint venture, limited liability company, or corporation (please type)

Address (please type)

Federal ID No. or Social Security No. (please type)

Phone No. (please type)

E-mail address - general for company (please type)

Company URL (please type)

Name and title of signer (please type)

Signature Date

If a Corporation

Name Address

_____, PRESIDENT _____

_____, SECRETARY _____

_____, TREASURER _____

If a Partnership

Name of Partners Address

_____ _____

_____ _____

_____ _____

If a Joint Venture

Name of Members Address

_____ _____

_____ _____

_____ _____

_____
(Name of Bidder)

If an Individual

Name of Individual	Address
_____	_____

If a Limited Liability Company (LLC)

Name of Members	Address
_____	_____
_____	_____
_____	_____

IF AWARDED THE CONTRACT:

_____
Contract Signatory (name and title)

_____
Project Manager (name, e-mail address and cell phone number)

_____
(Name of Bidder)

BID FORM CONTRACT NO. 4 - ELECTRICAL WORK
FOR
ADDITIONS AND ALTERATIONS AT SIWANOY ELEMENTARY SCHOOL

Pelham Union Free School District
Business Office
314 Pelhamdale Avenue
Pelham, New York 10803
Attention: James Hricay, Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.

2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.

3. In submitting this Bid, the Undersigned agrees:

   a. To hold the Bid open for forty-five (45) days after Bid Opening.
   b. To accept the provisions of the Instructions to Bidders.
   c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
   d. To commence the Work immediately upon receipt of Notice of Award.

4. The Undersigned agrees that the Work proposed herein will be Substantially Complete on or before the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.

5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.

6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____
_____	_____

_____
(Name of Bidder)

7. **BASE BID**

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications for Electrical Work:

$_____ (In numbers)

_____ Dollars
(in words)

8. **ALTERNATES**

The Undersigned agrees to provide all work in accordance with the requirements of the Specifications and the Drawings and includes all costs of related coordination, modification, or adjustment for the following:

Alternates No. 1 - 9: Not applicable

ALTERNATE NO. 10: SOLAR PANELS ON THE ROOF OF THE ADDITION

ADD _____ Dollars ($_____)

9. **UNIT PRICES** - None

10. **ALLOWANCES**

The Undersigned has included the following allowance in the Base Bid amount stated above:

ALLOWANCE NO. 1, Contingency Allowance: $75,000.00
ALLOWANCE NO. 2, Quantity Allowance: Not applicable
ALLOWANCE NO. 3, Quantity Allowance: Not applicable

The Undersigned has attached the following documents to this Bid:

a. Certificate of Compliance with the Iran Divestment Act
b. Non-Collusion Affidavit
c. Sexual Harassment Policy and Training Certification
d. Bid Security
e. Statement of Bidder's Qualifications AIA Document A305, including Exhibits A, B, C, and D.
f. Labor Law 220-i Certification Form
g. Certificate(s) of Registration with the NYSDOL as required by NY Labor Law Section 220-i

_____
(Name of Bidder)

_____ (If corporation, affix
Legal name of person, partnership, joint venture, limited liability company, or corporation (please type) corporate seal)

_____
Address (please type)

_____
Federal ID No. or Social Security No. (please type)

_____
Phone No. (please type)

_____
E-mail address - general for company (please type)

_____
Company URL (please type)

_____
Name and title of signer (please type)

_____ _____
Signature Date

If a Corporation
Name Address

_____ , PRESIDENT _____

_____ , SECRETARY _____

_____ , TREASURER _____

If a Partnership
Name of Partners Address

_____ _____

_____ _____

_____ _____

If a Joint Venture
Name of Members Address

_____ _____

_____ _____

_____ _____

If an Individual
Name of Individual Address

_____ _____

_____
(Name of Bidder)

If a Limited Liability Company (LLC)

Name of Members	Address
_____	_____
_____	_____
_____	_____

IF AWARDED THE CONTRACT:

_____
Contract Signatory (name and title)

_____
Project Manager (name, e-mail address and cell phone number)

_____
(Name of Bidder)

BID FORM CONTRACT NO. 5 - FIRE PROTECTION WORK
FOR
ADDITIONS AND ALTERATIONS AT SIWANOY ELEMENTARY SCHOOL

Pelham Union Free School District
Business Office
314 Pelhamdale Avenue
Pelham, New York 10803
Attention: James Hricay, Assistant Superintendent for Business

1. The Undersigned hereby declares that it has carefully examined all Bidding and Contract Documents and has inspected the actual location of Work, together with the local sources of supply, and has satisfied itself as to all quantities and conditions, and understands that in signing this Proposal, it waives all rights to plead any misunderstanding regarding the same.

2. The Undersigned further understands and agrees that it is to do, perform and complete all the Work in accordance with the Contract Documents and Contract and to accept in full compensation therefor, the amount of the Base Bid, modified by such additive or deductive alternatives, if any, as are accepted by the Owner.

3. In submitting this Bid, the Undersigned agrees:

   a. To hold the Bid open for forty-five (45) days after Bid Opening.
   b. To accept the provisions of the Instructions to Bidders.
   c. To enter into and execute a Contract within ten (10) days of the Notice of Award issue date, and to simultaneously furnish Performance and Labor and Material Bonds.
   d. To commence the Work immediately upon receipt of Notice of Award.

4. The Undersigned agrees that the Work proposed herein will be Substantially Complete on or before the dates indicated in specification Section 011000 - "Summary" and in the Project Milestone Schedule following Section 011000.

5. The Undersigned understands that the Owner reserves the right to accept or reject any or all Bids and to waive any informalities in the bidding.

6. The Undersigned acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____
_____	_____

_____
(Name of Bidder)

7. **BASE BID**

All labor, material, services and equipment necessary for completion of the Work shown on the Drawings and the Technical Specifications for Fire Protection Work:

$ _____ (In numbers)

_____ Dollars
(in words)

8. **ALTERNATES** - None

9. **UNIT PRICES** - None

10. **ALLOWANCES**

The Undersigned has included the following allowance in the Base Bid amount stated above:

ALLOWANCE NO. 1, Contingency Allowance: $10,000.00
ALLOWANCE NO. 2, Quantity Allowance: Not applicable
ALLOWANCE NO. 3, Quantity Allowance: Not applicable

The Undersigned has attached the following documents to this Bid:

a. Certificate of Compliance with the Iran Divestment Act
b. Non-Collusion Affidavit
c. Sexual Harassment Policy and Training Certification
d. Bid Security
e. Statement of Bidder's Qualifications AIA Document A305, including Exhibits A, B, C, and D.
f. Labor Law 220-i Certification Form
g. Certificate(s) of Registration with the NYSDOL as required by NY Labor Law Section 220-i

_____ (If corporation, affix
Legal name of person, partnership, joint venture, limited liability company, or corporation (please type) corporate seal)

_____
Address (please type)

_____
Federal ID No. or Social Security No. (please type)

_____
Phone No. (please type)

_____
(Name of Bidder)

_____
E-mail address - general for company (please type)

_____
Company URL (please type)

_____
Name and title of signer (please type)

_____ _____
Signature Date

If a Corporation
Name Address

_____ , PRESIDENT _____

_____ , SECRETARY _____

_____ , TREASURER _____

If a Partnership
Name of Partners Address

_____ _____

_____ _____

_____ _____

If a Joint Venture
Name of Members Address

_____ _____

_____ _____

_____ _____

If an Individual
Name of Individual Address

_____ _____

If a Limited Liability Company (LLC)
Name of Members Address

_____ _____

_____ _____

_____ _____

_____

(Name of Bidder)

IF AWARDED THE CONTRACT:

_____

Contract Signatory (name and title)

_____

Project Manager (name, e-mail address and cell phone number)

CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

As a result of the Iran Divestment Act of 2012 (the "Act"), Chapter 1 of the 2012 Laws of New York, a new provision has been added to State Finance Law (SFL) § 165-a and New York General Municipal Law § 103-g, both effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law) (the "Prohibited Entities List"). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date at which time it will be posted on the OGS website.

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each Bidder/Contractor, any person signing on behalf of any Bidder/Contractor and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the OGS website, that to the best of its knowledge and belief, that each Bidder/Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to SFL § 165-a(3)(b).

Additionally, Bidder/Contractor is advised that once the Prohibited Entities List is posted on the OGS Website, any Bidder/Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

During the term of the Contract, should the School District receive information that a Bidder/Contractor is in violation of the above-referenced certification, the School District will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the School District shall take such action as may be appropriate including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the Bidder/Contractor in default. The School District reserves the right to reject any bid or request for assignment for a Bidder/Contractor that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any Bidder/Contractor that is awarded a contract and subsequently appears on the Prohibited Entities List.

I, _____, being duly sworn, deposes and says that

he/she is the_____ of the _____Corporation

and that neither the Bidder/ Contractor nor any proposed subcontractor is identified on the Prohibited Entities List.

SIGNED: _____

SWORN to before me this_____day of_____202____

Notary Public: _____

OR

DECLARATION OF BIDDER'S INABILITY TO PROVIDE CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

Bidders shall complete this form if they cannot certify that the bidder /contractor or any proposed subcontractor is not identified on the Prohibited Entities List. The District reserves the right to undertake any investigation into the information provided herein or to request additional information from the bidder.

Name of the Bidder: _____

Address of Bidder _____

Has bidder been involved in investment activities in Iran? _____

Describe the type of activities including but not limited to the amounts and the nature of the investments (e.g. banking, energy, real estate): _____

_____

_____

If so, when did the first investment activity occur? _____

Have the investment activities ended? _____

If so, what was the date of the last investment activity? _____

If not, have the investment activities increased or expanded since April 12, 2012? _____

Has the bidder adopted, publicized, or implemented a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran? _____

If so, provide the date of the adoption of the plan by the bidder and proof of the adopted resolution, if any and a copy of the formal plan. _____

In detail, state the reasons why the bidder cannot provide the Certification of Compliance with the Iran Divestment Act below (additional pages may be attached): _____

_____

_____

I,_____being duly sworn, deposes and says that he/she is the

_____of the_____Corporation and

the foregoing is true and accurate.

_____
SIGNED

SWORN to before me this_____day of_____202____

Notary Public: _____

NON-COLLUSION AFFIDAVIT

By submission of this Bid, each Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint Bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of the party's knowledge and belief:

1. the prices in this Bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices, with any other Bidder or with any competitor,
2. unless otherwise required by law, the prices that have been quoted in this Bid have not been knowingly disclosed by the Bidder, and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly, to any other Bidder or to any competitor; and
3. no attempt has been made or will be made by the Bidder to induce any other person, partnership or corporation to submit or not to submit a Bid for the purpose of restricting competition

I, herby affirm under the penalties of perjury that the foregoing statement is true.

Dated: _____ Signed _____

_____
(Print Name)

_____
(Title)

SEXUAL HARASSMENT POLICY & TRAINING CERTIFICATION

I, _____, being duly sworn, deposes and
(Name of Individual Signing this Certification)

says that I am the _____ of the _____
(Title/Position of Signer) (Name of Bidder/Proposer)

and that by submission of this proposal, I certify on behalf of the above-named bidder/proposer, and in the case of a joint bid/proposal each party thereto certifies as to its own organization, under penalty of perjury, that the above-named bidder/proposer has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. I certify on behalf of the above-named bidder/proposer, and in the case of a joint bid/proposal each party thereto certifies as to its own organization, under penalty of perjury, that such policy, at a minimum, meets the requirements of Section 201-g of the New York State Labor Law.

By: _____
Signature

_____
Title

Sworn to before me this

_____day of _____, 20___

_____
Notary Public

Commission Expires:_____

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

BOND AMOUNT: $

PROJECT:
(Name, location or address, and Project number, if any)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

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User Notes: (1933002355)

Signed and sealed this day of ,

	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)*
	(Surety) *(Seal)*
(Witness)	*(Title)*

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AIA® Document A305™ – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:
(Organization name and address.)

SUBMITTED TO:
(Organization name and address.)

TYPE OF WORK TYPICALLY PERFORMED
(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:
(Check all that apply.)

[ ] Exhibit A – General Information
[ ] Exhibit B – Financial and Performance Information
[ ] Exhibit C – Project-Specific Information
[ ] Exhibit D – Past Project Experience
[ ] Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION
The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

_____ _____
Organization's Authorized Representative Signature **Date**

_____
Printed Name and Title

NOTARY
State of:
County of:
Signed and sworn to before me this day of

_____
Notary Signature

My commission expires:

ADDITIONS AND DELETIONS:
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AIA® Document A305™ – 2020 Exhibit A

General Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the day of in the year
(In words, indicate day, month and year.)

§ A.1 ORGANIZATION
§ A.1.1 Name and Location
§ A.1.1.1 Identify the full legal name of your organization.

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

§ A.1.1.4 Identify the address of your organization's principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

§ A.1.2 Legal Status
§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

.1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.

.2 If your organization is a partnership, identify its partners and its date of organization.

.3 If your organization is individually owned, identify its owner and date of organization.

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.4 If the form of your organization is other than those listed above, describe it and identify its individual leaders:

§ **A.1.2.2** Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

§ A.1.3 Other Information

§ **A.1.3.1** How many years has your organization been in business?

§ **A.1.3.2** How many full-time employees work for your organization?

§ **A.1.3.3** List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

§ **A.1.3.4** Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

§ A.2 EXPERIENCE

§ **A.2.1** Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ **A.2.2** State your organization's total dollar value of work currently under contract.

§ **A.2.3** Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

§ **A.2.4** State your organization's average annual dollar value of construction work performed during the last five years.

§ A.3 CAPABILITIES

§ **A.3.1** List the categories of work that your organization typically self-performs.

§ **A.3.2** Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

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§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

§ A.4 REFERENCES

§ A.4.1 Identify three client references:
(Insert name, organization, and contact information)

§ A.4.2 Identify three architect references:
(Insert name, organization, and contact information)

§ A.4.3 Identify one bank reference:
(Insert name, organization, and contact information)

§ A.4.4 Identify three subcontractor or other trade references:
(Insert name, organization, and contact information)

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AIA® Document A305™ – 2020 Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the day of in the year
(In words, indicate day, month and year.)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization's latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

§ B.1.4 Identify your organization's preferred credit rating agency and identification information.
(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization's identification number or other method of searching your organization's credit rating with such agency.)

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than $75,000?
(If the answer is yes, provide an explanation.)

§ B.2.2 In the last five years has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 failed to complete work awarded to it?

.2 been terminated for any reason except for an owners' convenience?

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.3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than $75,000?

.4 filed any lawsuits or requested arbitration regarding a construction project?

§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 been convicted of, or indicted for, a business-related crime?

.2 had any business or professional license subjected to disciplinary action?

.3 been penalized or fined by a state or federal environmental agency?

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AIA® Document A305™ – 2020 Exhibit C

Project Specific Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by and dated the day of in the year
(In words, indicate day, month and year.)

PROJECT:
(Name and location or address.)

CONTRACTOR'S PROJECT OFFICE:
(Identify the office out of which the contractor proposes to perform the work for the Project.)

TYPE OF WORK SOUGHT
(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

CONFLICT OF INTEREST
Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor's Project Office established?

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor's Project Office?

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor's Project Office that pertain to the Project.

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

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§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

§ C.2 EXPERIENCE RELATED TO THE PROJECT

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

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§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

§ C.5.5 Available bonding capacity as of the date of this qualification statement:

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AIA® Document A305™ – 2020 Exhibit D

Contractor's Past Project Experience

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

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AIA® Document A305™ – 2020 Exhibit E

Contractor's Past Project Experience, Continued

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

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Labor Law 220-i Certification Form

-Sign and Submit with Bid-

By submission of this bid, the person authorized to sign on behalf of the Bidder hereby certifies, under penalty of perjury, that: (i) the Bidder is registered with the New York State Department of Labor pursuant to Section 220-i of the New York Labor Law and (ii) each of the subcontractors engaged by the Bidder for this Project are also registered.

Bidder further represents that it has included with this certification, a copy of the Certificate(s) of Registration issued by the Commissioner of the Department of Labor for the Bidder and each of its subcontractor(s).

Project: _____

Bidder Name (Corporate): _____

Bidder Address: _____

Signature of Corporate Officer: _____

Print Name and Title: _____

Date: _____

Sworn to before me this _____
day of _____, 20____

_____
Notary Public

DRAFT

AIA® Document A132™ – 2019

Standard Form of Agreement Between Owner and Contractor,
Construction Manager as Adviser Edition

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

« **Pelham Union Free School District** »« »
«The Sanborn Map Building »
« 629 Fifth Avenue »
« Pelham, NY 10803 »

and the Contractor:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location, and detailed description)

«Additions and Alterations»
«Siwanoy Elementary School »
«489 Siwanoy Pl, Pelham, NY 10803»
SED # 66-16-01-03-0-004-014

The Construction Manager:
(Name, legal status, address, and other information)

« **Triton Construction**»« »
« 550 7th Avenue, 14th Floor »
« New York, NY 10018 »
« »

The Architect:
(Name, legal status, address, and other information)

« **KG+D Architects, PC** »« »
« 285 Main Street »
« Mount Kisco, NY 10549 »
« P: 914.666.5900 »

The Owner and Contractor agree as follows.

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This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A LIST OF DRAWINGS
EXHIBIT B TABLE OF CONTENTS OF SPECIFICATIONS
EXHIBIT C CONTRACTOR'S PROPOSAL OR BID
EXHIBIT D CONTRACTOR'S PROOF OF INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[« »] The date of this Agreement.

[« »] A date set forth in a notice to proceed issued by the Construction Manager.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

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§ 3.3 Intentionally omitted

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:
(Check one of the following boxes and complete the necessary information.)

[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:
(Check the appropriate box.)

[« X »] Stipulated Sum, in accordance with Section 4.2 below

[« »] Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

[« »] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be « » ($ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

§ 4.2.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
NONE	NONE	NONE

§ 4.2.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.2.4 Unit prices, if any:
(Identify the item and state the unit price, and quantity limitations, if any, to which the unit price will be applicable.)

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Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any: NONE
(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)

« NONE »

§ 4.6 Other: NONE
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

« NONE »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall make progress payments on account of the Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager for the prior month not later than the «tenth» day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the «tenth» day of the «next» month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « forty-five » (« 45 ») days after the Construction Manager receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents and approved by the Construction Manager and Architect. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment. No payment shall be due under this Agreement until there is a schedule of values that has been approved by the Architect and the Construction Manager.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as revised for this Project, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.4.3.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.4.3.2 The amount of each progress payment shall then be reduced by:

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.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019, as revised for this Project;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;

.5 The sum required by law to be held for any lien(s) on public improvement filed against the Contract Sum until such liens have been released or discharged;

.6 The sum required to be withheld by order or direction of the New York State Department of Labor or its Commissioner or designed Hearing Officer(s); and

.7 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Intentionally Omitted
§ 5.1.6 Intentionally Omitted

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« Five percent (5%) »

§ 5.1.7.1.1 The following items are not subject to retainage: Not applicable
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

«NONE »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows: Not applicable
(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

« NONE »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The amount of this Application for Payment certified for payment shall not exceed the unpaid contract balance less (a) two times the value of any remaining items to be completed or corrected as determined by the Architect; (b) the sum required by law to be held for any lien(s) on public improvement filed against the Contract Sum that has not been released or discharged, (c) any sum required to be withheld by order or direction of the New York State Department of Labor or its Commissioner or designated Hearing Officer(s) and (d) an amount necessary to satisfy any other claims, liens or judgments against the Contractor or the Contract Sum that have not been suitably discharged.
(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Contractor may seek an extension of time in accordance with Articles 8 and 15 of AIA Document A232–2019, as revised for this Project.

§ 5.2 Final Payment
§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

§ 5.2.1.1 Final payment, constituting the entire unpaid balance of the Contract Sum, less any sum required by law to be held due to a lien(s) on public improvement filed against the Contract Sum that has not been released or discharged and

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any sum required to be withheld by order or direction of the New York State Department of Labor or its Commissioner or designed Hearing Officer(s), shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, as revised for this Project, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 the Contractor has submitted all Close-Out documents and complied with all Close-Out requirements; and

.3 a final Certificate for Payment has been issued by the Architect.

§ 5.2.1.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment. After final payment, payment of any sums withheld due to a lien against a public improvement filed with the Owner against the Contract Sum will be made to the Contractor when the lien is discharged and payment of any sum withheld by order or direction of the New York State Department of Labor or its Commissioner or designated Hearing Officer(s) shall be paid as ordered or directed by the New York State Department of Labor or its Commissioner or designated Hearing Officer(s) or by Court Order.

§ 5.3 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

« As per Section 106-b of New York General Municipal Law »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, as revised for this Project, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232–2019, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Article 15 of AIA Document A232–2019.

[« X »] Litigation in a court of competent jurisdiction in Westchester County in the State of New York.

[« »] Other: *(Specify)*

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019, as revised for this Project.

§ 7.1.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A232–2019 as revised for this Project, then the Owner shall pay the Contractor a termination fee as follows:

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(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

« The Contractor shall recover as its sole remedy payment for Work properly executed in connection with the terminated portion of the Work prior to the effective date of the termination (including items properly and timely fabricated off the Project site, delivered and stored in accordance with the Owner's instructions) as well as any costs incurred by the Contractor to implement Owner directed work to protect and preserve the work completed by the Contractor prior to the notice of termination less the credits due the Owner and less the sums required by law to be held by the Owner due to any liens on public improvement filed against the Contract Sum that have not been discharged (which sums withheld due to such liens will be paid when such liens are discharged or released) and less sums required to be withheld from the Contractor by order or direction of the New York State Department of Labor or its Commissioner or designated Hearing Officer(s) (which will be paid as and when ordered or directed by the New York State Department of Labor or its Commissioner or designated Hearing Officer(s) or by Court Order). The Contractor shall not be entitled to payment of any other sums. The Contractor shall not be entitled to any payment for the terminated portion of the Work and, by signing this Agreement waives and forfeits any claim for damages, overhead and/or lost profits for the terminated portion of the Work. »

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019, as revised for this Project.

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019 as revised for this Project; in such case, the Owner shall incur no liability to Contractor by reason of the suspension except that Contractor may request an extension of its time to complete its Work in accordance with the Contract Documents..

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 as revised for this Project or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

« James Hricay, Assistant Superintendent for Business »
« Pelham Union Free School District »
« Mailing Address: 575 Colonial Avenue, Pelham, NY 10803 »
« Office Address: 314 Pelhamdale Avenue, Pelham, NY 10803 »
« 914-738-9140x1142 »
« »

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

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§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in Article 11 of AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as revised for this Project and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in Article 11 of AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as revised for this Project , and elsewhere in the Contract Documents.

§ 8.6 Intentionally Omitted

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Intentionally Omitted

§ 8.8 Other provisions: NONE

« NONE »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, as revised herein for this Project

.2 intentionally omitted

.3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as revised for this Project

.4 intentionally omitted

(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings: those listed in Exhibit A

.6 Specifications those listed in the Table of Contents of the Project Manual for this Project, which is the Table of Contents attached hereto as Exhibit B.

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work

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[« »] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

EXHIBIT C CONTRACTOR'S PROPOSAL OR BID
EXHIBIT D CONTRACTOR'S PROOF OF INSURANCE AND BONDS

This Agreement is entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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AIA® Document A312® – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL	**SURETY**
Company: *(Corporate Seal)*	Company: *(Corporate Seal)*
Signature: _____	Signature: _____
Name and Title:	Name and Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Init.
/

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

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§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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AIA® Document A312® – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:
Amount: $
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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DRAFT

AIA® Document A232™ – 2019

General Conditions of the Contract for Construction,
Construction Manager as Adviser Edition

for the following PROJECT:
(Name, and location or address)

«Additions and Alterations»
«Siwanoy Elementary School »
«489 Siwanoy Pl, Pelham, NY 10803»
SED # 66-16-01-03-0-004-014

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

Triton Construction
550 7th Avenue, 14th Floor
New York, NY 10018
« »

THE OWNER:
(Name, legal status, and address)

Pelham Union Free School District
The Sanborn Map Building
629 Fifth Avenue
Pelham, NY 10803

THE ARCHITECT:
(Name, legal status, and address)

KG+D Architects, PC
285 Main Street
Mount Kisco, NY 10549
P: 914-666-5900

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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TABLE OF ARTICLES

1 GENERAL PROVISIONS

2 OWNER

3 CONTRACTOR

4 ARCHITECT AND CONSTRUCTION MANAGER

5 SUBCONTRACTORS

6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

7 CHANGES IN THE WORK

8 TIME

9 PAYMENTS AND COMPLETION

10 PROTECTION OF PERSONS AND PROPERTY

11 INSURANCE AND BONDS

12 UNCOVERING AND CORRECTION OF WORK

13 MISCELLANEOUS PROVISIONS

14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents consist of the Agreement between the Owner and Contractor (hereinafter the Agreement), advertisement or invitation to bid (if any), Instructions to Bidders (if any), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Agreement, other documents listed in the Agreement, and Modifications issued after execution of the Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, or the Contractor's bid or proposal.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services. Reference to standard specifications, manuals or codes will mean reference to the latest standard specification, manual or code in effect at the time of the execution of the Agreement, unless otherwise stated. When reference is made to a manufacturer, trade association, reference standard or similar source (such as ASTM, ASA, AISC, ACI, etc.) the standards or requirements of such entity shall be incorporated into the Specifications and have the force and effect as though they were set forth expressly. Upon entering into the Agreement, the Contactor acknowledges its familiarity with those references, codes, etc. The date of the referenced standard shall be the latest edition in effect at the time of the execution of the Agreement unless otherwise stated.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

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§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.11 Addendum. An Addendum is a change to or clarification of the Contract Documents issued by the Architect or Construction Manager, with the Owner's approval, prior to the execution of the Agreement and listed in the Agreement. The Addendum may consist of written, graphic or pictorial instruments.

§ 1.1.12 Alternate. An Alternate is a variation to the requirements of the Contract on which a separate price is to be received by the Owner as part of a bid or proposal. If the Alternate is accepted in writing by the Owner, the variation is then a part of the Contract and the amount of money quoted to be added or deducted from the Base Bid or proposal is taken into account in determining the Contract Sum.

§ 1.1.13 Bulletin. A Bulletin is a written or graphic instrument issued by the Architect after the execution of the Agreement which modifies or interprets the Contract Documents, including the Drawings and Specifications, by additions, deletions, clarifications or corrections.

§ 1.1.14 Furnish. Furnish means to supply and deliver to the Project site(s) or other designated location, ready for unloading, unpacking, storing, assembly, installation, application, erection or other form of incorporation into the Project and maintained ready for use. Furnish also means to supply and deliver products requiring additional or supplemental fitting, assembly, fabrication or incorporation into other elements of the Project directly to the fabricator, installer or manufacturer as required.

§ 1.1.15 Indicated and Shown. The phrase "Indicated and Shown" means as detailed, scheduled, or called for in the Contract Documents.

§ 1.1.16 Include. Include in any form other than "inclusive" is non-limiting and is not intended to mean "all inclusive."

§ 1.1.17 Install. Install means unload, unpack, fit, attach, assemble, apply, place, mount in position, connect, apply, anchor, erect, finish, cure, protect, adjust, start in operation, clean and similar operations required to properly incorporate the work into the Project ready for safe and regular use and/or operation.

§ 1.1.18 Provide. Provide (including derivatives thereof) is used in the Contract Documents, it means to properly fabricate, complete, transport, deliver, install, erect, construct, test and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place ready for safe and regular use and/or operation of the item, material or service indicated.

§ 1.1.19 Replace. Replace means remove designated, damaged, rejected, defective, unacceptable or nonconforming work from the Project and provide new work meeting the requirements of the Contract Documents in place thereof.

§ 1.1.20 Knowledge, recognize and discover, their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize) and discovers (or should discover) in exercising the care, skill and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the care, skill and diligence required of the Contractor by the Contract Documents.

§ 1.1.21 As used in the Contract Documents the term(s) accepted, directed, permitted, requested, required, and selected, mean, unless otherwise explained, 'accepted by the Architect,' 'directed by the Architect and/or the Construction Manager,' 'permitted by the Architect and/or the Construction Manager,' 'requested by the Architect and/or the Construction Manager,' 'required by the Architect and/or the Construction Manager,' and 'selected by the Architect.' However, no such implied meaning will be interpreted to extend the Architect's or Construction Manager's responsibility into the Contractor's area of construction supervision; 'as accepted,' or 'acceptable substitute,' and 'for review' means the Architect is the sole judge of the quality and suitability of the proposed substitutions. Where used in conjunction with the Architect's response to submittals, requests, applications,

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inquiries, reports and claims by the Contractor, the meaning will be held to be the limitations of the Architect's responsibilities and duties as stated in the General Conditions. In no case will 'accepted' by the Architect be interpreted as an assurance to the Contactor that the requirements of the Contract Documents have been fulfilled.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.1.2 In the event of any error, omission, ambiguity, discrepancy or conflict among the Contract Documents or between the Contract Documents and any applicable standard, code, statute, regulation or ordinance, the Contractor shall notify the Construction Manager and the Architect of same, comply with the more stringent requirement and comply with the Architect's interpretation. Where there is a conflict in quantity, unless otherwise directed by the Construction Manager, Architect or Owner, the Contractor shall provide the greater quantity. Where there is a conflict in quality, unless otherwise directed by the Construction Manager, Architect or Owner, the Contractor shall provide the superior quality.

§ 1.2.1.3 Before ordering any materials or doing any Work, each Contractor and Subcontractor shall verify measurements at the Project sites and shall be responsible for the correctness of such measurements. No extra charges or compensation will be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings. Any difference which may be found shall be submitted to the Construction Manager and the Architect for resolution before proceeding with the Work.

§ 1.2.1.4 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such departure to the Construction Manager and the Architect for approval by the Architect before making the change.

§ 1.2.1.5 Drawings, in general, are to scale, but all working dimensions shall be taken from the figured dimensions or by actual measurements taken at the Project sites and in no case by scaling. The Contractor shall study and compare all Drawings and verify all figures before laying out or constructing the Work. Whether or not an error is believed to exist, deviation from Drawings and the dimensions given thereon shall be made only after approval, in writing, is obtained from the Architect.

§ 1.2.1.6 The Contractor shall provide all labor, materials, equipment, appliances and services necessary to execute and complete all work as required by the Contract Documents and the applicable Building Codes. Whenever any additional materials and/or workmanship not shown or specified are required to complete the Work of the Contract Documents in accordance with the obvious intent thereof, the Contractor shall provide these materials and workmanship at no additional cost to the Owner. The Contractor shall refer to all of the Drawings, including those showing the work of others performing Work in connection with the Project, and all Divisions of the Specifications and shall perform all Work reasonably inferable from the Contract Documents as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. The Contractor represents that the Subcontractors, manufacturers, vendors and suppliers engaged or to be engaged by it are and will be familiar with the requirements for performance by them of their obligations.

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§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 Applicable codes and standards for material furnished and work installed shall include all state laws, local ordinances, requirements of governmental agencies having jurisdiction, and applicable requirements of the codes and standards identified in Division #1 of the Project Manual.

§ 1.2.5 All indications and notations on the Drawings which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects. The inadvertent failure to capitalize such terms in other Contract Documents shall be of no significance.

§ 1.4 Interpretation

In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.4.1 Wherever required by the context, the singular shall include the plural, and the plural shall include the singular. Each defined term herein may be used in its singular or plural form whether or not so defined.

§ 1.4.2 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- **.1** Modifications issued after execution of the Agreement.
- **.2** The Agreement Between the Owner and the Contractor.
- **.3** Addenda, issued prior to the execution of the Agreement, with those of later dates having precedence over those of earlier dates.
- **.4** Special provisions of requirements (if any).
- **.5** The Supplementary Conditions (if any).
- **.6** The General Conditions of the Contract for Construction.
- **.7** Drawings and Specifications.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants are instruments of the Architect's service or of the Architect's consultants' service pursuant to which the Contractor's Work is to be performed. The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and the Owner shall be deemed an Owner of their Instruments of Service prepared for this Project and they all retain all common law, statutory, contractual and other reserved rights in their Instruments of Service for this Project, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Owner's or Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing by (1) depositing the notice in the United

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States mail addressed to the authorized representative of the party to be notified as specified in the Agreement (or if no representative is specified for such party at the address stated in the Agreement for such party), postpaid and registered or certified with return receipt requested, (2) depositing the notice for overnight delivery (prepaid or billed to the party giving notice) with a nationally recognized overnight delivery service (e.g., Federal Express, USPS, UPS, etc.) addressed to the authorized representative of the party to be notified (or if no representative is specified for such party at the address stated for such party in the Agreement) or (3) by delivering the notice in person to authorized representative of the party to be notified as specified in the Agreement (or if no representative is specified for such party at the address stated in the Agreement for such party). Notices may be made by the party giving the notice, by the party's counsel, the authorized representative of the party as specified in the Contract, or by an officer of the party that has authority to bind the party. Notices are to be sent to the designated representative of the party to whom the notice is addressed to the address stated in the Agreement. The designated representative is the representative stated in the Agreement (or if no representative is specified for such party at the address stated in the Agreement for such party). and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.1.1 Notice deposited in the mail in accordance with this Section 1.6.1 shall be effective unless otherwise stated in the Contract from and after the fourth (4th) day following the date deposited in a U.S. mail receptacle or when actually received by the party to whom addressed, whichever is earlier. Notices transmitted by overnight delivery shall be effective the first business day (excluding holidays, Saturdays and Sundays) following the day of deposit with the nationally recognized overnight delivery service or when actually received by the party to whom addressed, whichever is earlier. Notice given by delivery in person shall be effective only if and when received by the party to be notified.

§ 1.6.1.2 By giving the other parties at least seven (7) days written notice thereof, the Contractor, Owner, and Architect have the right to change their respective designee and respective address to any address in the United States of America for receipt of notices

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model will be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.9 Any public communications or disclosure of materials or information with respect to the Project by the Contractor and their employees and Subcontractors related to the Project or their Contract, except as required by law, shall be subject to the Owner's prior written approval, including, without limitation, any promotional, marketing, media or other material or information related to the Owner or the Project.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.2 Evidence of the Owner's Financial Arrangements – Not used for this Project

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§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for the NYSED Building Permit that will be obtained by the Owner with the assistance of the Architect, the Contractor shall secure and pay for all permits, connection fees, inspections and necessary approvals applicable to or customarily obtained for the Work and provide copies of same to the Construction Manager, the Owner and the Architect.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates prior to the completion of the Project, the Owner will employ a successor architect and, in its discretion, may employ a successor construction manager.

§ 2.3.5 Upon written request of the Contractor and to the extent they exist and are in the Owner's possession at the time of the request, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 The Owner, with the assistance of the Construction Manager and/or the Architect, shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control that the Contractor needs to perform the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 Unless otherwise provided in the Contract Documents or in the case of emergency circumstances, the Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a three-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after such three day period and without prejudice to other remedies the Owner may have, correct such default or neglect. The Owner's reasonable cost of correcting such default or neglect shall be deducted from payments due the Contractor by Change Order, Construction Change Directive, back charge or other means. The Construction Manager or Architect may, pursuant to Section 9.5.1, withhold, modify and/or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such default or neglect. The Owner's reasonable costs will include Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure and the Owner's reasonable attorney's fees arising from the Contractor's default, neglect or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

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§ 2.5.1 Where the Contractor's default and/or neglect to carry out its Work in accordance with the Contract Documents threatens the health, safety and/or welfare of the occupants of the Owner's facilities and/or threatens the structural integrity and/or preservation of the Owner's facilities, the Owner may proceed to correct or carry out the Contractor's Work without notice to the Contractor.

§ 2.6 The rights stated in this Article 2 and elsewhere in the Contract Documents are cumulative and not in limitation of any legal or equitable rights of the Owner or Contractor or of any other rights provided to the Owner or Contractor in the Contract Documents.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager, Architect, Owner in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 It is understood and agreed that the relationship between the Contractor and the Owner shall be that of an independent contractor. Nothing contained in or inferable from the Contract Documents shall be deemed or construed to (1) make the Contractor the agent, servant or employee of the Owner or (2) create any partnership, joint venture or other association between the Owner and Contractor. Any direction or instruction by the Owner with regard to the Work will be given solely to relate the results the Owner desires to obtain from the Work and shall not be construed as affecting the Contractor's independent contractor status.

§ 3.1.5 The Contractor shall conduct its Work in compliance with federal, state, county and local laws, rules, regulations and ordinances, including NYS Uniform Fire Prevention and Building Code, Section 155.5 of the Regulations of the New York Commissioner of Education (8 NYCRR 155.5), and NYS Education Department Manual of Planning Standards for School Buildings.

§ 3.1.6 The Contractor shall attend progress meetings with the Construction Manager and such other persons as the Owner may require. The progress meeting shall include the Contractor's representative as well as supervisory personnel of any Subcontractor or other person or entity in charge of phases or significant components of the Work. These progress meetings shall be held at the Project sites once a week unless otherwise designated by the Owner or the Architect.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.1.1 Execution of the Contract is also a representation that the Contractor and each Subcontractor have had adequate access to the Project site(s) and have satisfied themselves as to the nature and location of the Work, including any obstruction, the amount of Work, the equipment and facilities needed during the execution of the Work and all other matters which can in any way affect the Work or the cost thereof and have studied the Contract Documents and all other documents pertaining to the installation of other trades which may influence the Contractor's Work.

§ 3.2.1.2 Execution of the Contract is also a representation that the Contractor has evaluated and satisfied himself as to the conditions and limitations under which the Work is to be performed, including, without limitation (1) the

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location, condition, layout and nature of the Project site(s) and surrounding areas; (2) generally prevailing climatic conditions; (3) the availability and cost of labor, materials, tools and equipment necessary to perform the Work; and (4) any pertinent limitations on the performance of the Work.

§ 3.2.1.3 Each Contractor shall be responsible for all measurements that may be required for execution of the Work to the exact position and elevation as prescribed by the Contract Documents or as the same may be modified at the direction of the Architect to meet changed conditions or as a result of a modification to the Contract.

§ 3.2.1.4 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing Work.

§ 3.2.1.5 The exactness of grades, elevations, dimensions or locations given in the Contract Documents or the work installed by other contractors is not guaranteed by the Architect or the Owner. The Contractor shall satisfy itself as to the accuracy of all grades, elevations, dimensions, utilities and locations.

§ 3.2.1.6 Prior to connecting its Work to existing structures or other contractor's work, the Contractor shall inspect and verify all dimensions and the suitability of the existing structures or work to receive the Contractor's Work. Any errors due to the Contractor's failure to verify such grades, elevations, dimensions, or locations shall be rectified promptly by the Contractor without any additional cost to the Owner.

§ 3.2.1.7 The Contractor is responsible for restorations and/or repair of utilities, private property, buildings, pavement, walkways, roads, equipment, materials, etc. damaged by its activities during the performance of its Work.

§ 3.2.1.8 Except as set forth in Article 10, the Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph 3.2.1.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work and at frequent intervals during the progress of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.2.1 Should the Contractor perform any construction activity knowing it involves an error, inconsistency or omission in the Contract Documents without reporting such error, inconsistency or omission to the construction Manager and the Architect, the Contractor shall be solely responsible for such performance and shall bear all costs of correction.

§ 3.2.2.2 If any words or numbers that are necessary to a clear understanding of the Work are illegible or omitted, or should an error or discrepancy occur in any of the Contract Documents, the Contractor shall immediately notify the Construction Manager and the Architect, in writing, of such illegibility, omission, error or discrepancy and the Contractor shall not proceed with that portion of the Work until clarification from the Architect is received. If the Contractor proceeds without so notifying the Construction Manager and the Architect and/or without waiting for clarification from the Architect, the Contractor shall be responsible for the cost of correcting same, including any resulting damage to the Owner and/or other Trades.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known

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to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 Any necessary change shall be ordered as provided in Article 7, subject to the requirements of Section 1.2 and other provisions of the Contract Documents.

§ 3.2.6 Prior to start of any portion of the Work, the following shall occur.

.1 The Contractor will establish base lines and benchmarks at the site of the Work from which the Contractors shall complete the layout of the Work to be performed under the Contract.

.2 From the basic data established by the Contractor, the individual Trade/Specialty/Subcontractors shall establish reference control points and complete the layout of the work.

.3 Further, the Contractor (unless otherwise outlined in the Contract Documents) shall be responsible for the establishment of points, wall and partition lines required by the various Contractors and Subcontractors in laying out their work.

.4 The Contractor (unless otherwise outlined in the Contract Documents) shall furnish such stakes and other required equipment, tools and materials, and all labor as may be required in laying out any part of the Work from the base lines and benchmarks established by said Contractor.

.5 If, for any reason, monuments are disturbed, it shall be the responsibility of the offending Contractor to reestablish them, without cost to the Owner, as directed by the Architect.

.6 The Architect may require that construction work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking completed work or the work in progress.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures. All loss, damage, liability or cost of correcting defective work arising from the employment of specific construction means, methods, techniques, sequences or procedures shall be born solely by the Contractor.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

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3.3.4 The Contractor shall be required to perform its Work with no interruption to the Owner's operations, including its educational, administrative and business operations. Any work which will interfere with the Owner's operations and/or which is to be performed when the Owner's schools are in session shall be performed during after school hours, Saturdays, Sundays, holidays or times when school is not in session at no additional cost to the Owner. The Owner reserves the right to determine what work will "interfere" with its operations and said determination will be final.

§ 3.3.4.1 The Contractor may request access to the Project site(s) during times beyond the work hours permitted. Approval of such a request is solely at the discretion of the Owner. If approval is given, the Contractor is responsible for paying all additional costs incurred by the Owner for providing Project site(s) to the Contractor during the additional time periods, including but not limited to any overtime costs incurred for the Owner's staff and additional fees of the Construction Manager and the Architect.

§ 3.3.4.2 The Owner shall not be responsible for any overtime charges or shift differential charges incurred by the Contractor during the course of the Project. Any and all costs associated with Work performed at hours requiring the payment of overtime or shift differentials by the Contractor to its workers shall be the Contractor's responsibility.

§ 3.3.4.2.1 Under no circumstances shall the Contractor or its Subcontractors be entitled to be reimbursed for overtime, except when the Owner specifically agrees in writing to pay for overtime charges that will be incurred by the Contractor for a specified purpose. In such an event, the Owner shall reimburse the Contractor or its Subcontractor on the basis of premium payment only, plus the cost of insurance and taxes based on the premium payment period.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.1.1 Notwithstanding any other provision of the Contract Documents, Contractor shall perform at least twenty-five (25%) percent of the field work with its own full-time employees. For purposes of the preceding sentence, any part of the work performed by supervisory personnel (persons above level of foreman) or by office personnel shall not be considered part of the field work performed by Contractor's employees. Such items as bonds, certificates, shop drawings and similar items are not to be counted as field work that contributes to satisfying the twenty-five (25%) percent requirement.

§ 3.4.1.2 The Contractor shall be responsible for coordinating the work of its own forces and the work of subcontractors engaged by it to perform the Work of the Project on its behalf. The Contractor shall review any specified procedure(s) or installation procedure(s) with its employees and/or subcontractors, including those recommended by any product manufacturer, prior to the commencement of the relevant portion of the Work to be performed.

§ 3.4.1.3 The Contractor solely is responsible for managing labor and labor relations with respect to those engaged by it to perform the Work of the Project, including but not limited to labor disputes or concerted activity. No delay or interference with the Work schedule and/or other contractors at the Project site(s) shall be excused by reason of labor problems affecting the Contractor or any of its Subcontractors. There shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity at the Project sites for any reason by anyone employed or engaged by the Contractor to perform its portion of the Work. There shall be no lockout at the Project by the Contractor.

§ 3.4.1.3.1 Should it become necessary to create a separate entrance for a Contractor involved in a dispute, all costs associated with creating such entrance shall be borne by the Contractor involved in the dispute. Such costs shall include but not be limited to signage, fencing, temporary roads and security personnel.

§ 3.4.1.3.2 The Contractor shall be liable to the Owner for all damages and additional costs incurred by the Owner as a result of work stoppages, slowdowns, disputes or strikes of labor retained by the Contractor.

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§ 3.4.1.3.3 If the Contractor has engaged the services of workers and/or subcontractors who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the Architect, the Construction Manager or the Owner, any conflict between its Contract with the Owner and any agreements or regulations of any kind at any time in force among members of a trade union or any councils that regulate the activities of a trade. If the progress of the Project is effected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of a conflict involving any labor agreement or regulation, the Owner may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Change Directive but in no case shall any additional cost of such change be charged by the Contractor to the Owner.

§ 3.4.1.4 In the event of strikes or labor disputes by the Contractor's forces or by other contractors, the Contractor shall continue with its Work and provide all necessary labor as required to maintain the schedule and completion of the Project. The Contractor shall ensure that its Work continues uninterrupted during the pendency of a labor dispute.

§ 3.4.1.5 The Contractor and all subcontractors shall ensure that each trade contractor affords all other trade contractors and subcontractors reasonable opportunity for the installation of their work and the storage of their materials.

§ 3.4.1.6 No extension of time shall be granted for delays caused by labor or material disputes.

§ 3.4.1.7 The Contractor shall perform its Work in accordance with the standards of the construction industry applicable in the location of the Project.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Owner reserves the right to object to the Contractor's use of unfit persons or persons not skilled in the tasks assigned to them. Should any disorderly, incompetent, unfit, unskilled, or otherwise reasonably objectionable person be hired or employed by Contractor on the Project, upon request of the Owner, such person shall be removed from the Project and not again assigned to the Project without the written permission of the Owner.

§ 3.4.4 Prior to commencement of its Work, the Contractor shall furnish in writing to the Owner, the Construction Manager and the Architect: (1) a written list of the names, addresses and telephone numbers, including cellular telephone numbers and personal/home telephone numbers, of the members of Contractor's organization, who can be contacted in the event of an off-hours emergency at one or both of the Project sites; and (2) the name, address and telephone number of the bonding company for the Contractor, including the name, address and telephone number of Contractor's representative at the bond company for this Project.

§ 3.4.5 Storage space will be allotted to the Contractor by the Owner, to the extent such space is determined by the Owner, in its sole discretion, to be available. The Contractor shall be responsible for securing appropriate space for its material with the Owner prior to delivery. If sufficient space is not available on the Project site(s), the Contractor shall provide local off-site storage and/or storage containers at its own cost and expense. Should the location of any of the material stored on-site obstruct the progress of any portion of the Work or the Project, this material shall be moved by the Contractor from place to place or from the premises, as the Construction Manager may direct, and such movement shall be done without any cost to the Owner.

§ 3.4.6 The Contractor shall not unreasonably encumber the Project sites with materials or equipment. To the extent storage space is available, only materials and equipment that will be used directly in the performance of the Contractor's Work shall be brought to and stored on the Owner's property. The Contractor shall schedule delivery of materials and equipment to minimize long term storage at the Project sites, to prevent overcrowding of construction spaces and/or the Project site(s), and to ensure minimum holding times for materials that are flammable, hazardous,

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easily damaged, or sensitive to deterioration, theft or other loss. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor. After equipment is no longer required for its Work, the Contractor shall promptly remove such equipment from the Owner's property.

§ 3.4.7 All deliveries of materials and equipment to the Owner's property and the Project site(s) shall be scheduled and coordinated with the Construction Manager and the Owner. Unexpected or uncoordinated deliveries may be turned away by the Owner at its sole discretion. The Owner's refusal of a delivery shall not give rise to or be the basis for a claim of delay in time or monetary damages.

§ 3.4.8 The Contractor shall inspect materials and equipment upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. The Contractor shall store materials in manner that allows for inspection and, when needed, measurement of quantity or counting of units. The Contractor shall store materials and equipment in a manner that will not endanger the Work or any other structures on the Project sites. The Contractor shall store materials that are subject to damage by the elements, under cover in a weathertight enclosure with ventilation adequate to prevent condensation. The Contractor shall comply with material manufacturer's written instructions concerning temperature, humidity, ventilation and weather-protection requirements for storage and installation.

§ 3.4.9 To the fullest extent possible, the Contractor shall provide products of the same kind, from a single source. When two or more items of the same material or equipment are required (pumps, valves, air conditioning units, etc.), they shall be made by the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, except as otherwise indicated. The Contractor shall provide products which are compatible within systems and other connected items. If the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

§ 3.4.9.1 The Contractor is responsible for providing products and construction methods compatible with products and construction methods of other Contractors. If a dispute arises between Contractors over concurrently selectable but incompatible products, the Architect will determine which products shall be used.

§ 3.4.10 With respect to sitework materials, if any, all products submitted for use and incorporated into the Project shall be on the Approved list of Materials and Equipment published by the NYSDOT Materials Bureau, most recent edition.

§ 3.4.11 All products submitted for use and incorporated into this Project shall be asbestos free. The Contractor shall insure that absolutely no asbestos containing material is used in conjunction with the performance of its Work. The Contractor bears sole responsibility to ensure that no asbestos containing material is built into the construction, or that any equipment used in the construction contains any asbestos containing material. If asbestos containing material is found, at any time during or after the construction is completed, it shall be the responsibility of the Contractor who installed said material to remove it and replace it with new non-asbestos containing material, as per federal, state and local mandates.

§ 3.4.12 Applicable codes and standards for material furnished and work installed shall include all state laws, local ordinances, requirements of governmental agencies having jurisdiction, and requirements of state, federal and industry codes and standards that apply to the Project and its components, including but not limited to:

1. New York State Uniform Fire Prevention and Building Code and amendments thereto.
2. New York State Energy Conservation Construction Code.
3. State Education Department Manual of Planning Standards and 8 N.Y.C.R.R. § 155.5.
4. New York State Department of Transportation, Office of Engineering, Standard Specification, Construction and Materials, dated January 2, 1990, and latest addendum thereto.
5. Life Safety Code – NFPA 101-91.
6. National Electric Code
7. National Board of Fire Underwriters
8. Any other codes or standards referenced in the Specifications and Drawings.

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§ 3.4.13 Welding. The Contractor shall ensure the safe handling and storage of all welding materials, acetylene and oxygen tanks, and other equipment required for welding and cutting work at the Project site(s). Such storage shall be in compliance with OSHA regulations. All welding materials and equipment shall be removed promptly from the premises upon completion of the welding and cutting work. All cutting and welding performed within an occupied building or adjacent to a window or intake vent shall be performed when Owner's facilities are not occupied.

§ 3.4.13.1 Appropriate fire extinguishing equipment shall be provided where welding or cutting is to be performed. Sprinklers subject to fusing from heat due to welding or cutting shall be temporarily shielded, with valves to remain open. Contractors will be back charged for all fines imposed for false fire alarms.

§ 3.4.13.2 Welding or cutting shall not be performed in or near rooms or locations where flammable gases, liquids or vapors, lint, dust or loose combustible stocks are present unless suitably protected when sparks or hot metal from welding or cutting operations may cause ignition or explosion of such materials.

§ 3.4.13.3 Combustible construction or material shall be wet down or protected by noncombustible shields or covers from possible sparks, hot metal or oxide.

§ 3.4.14 The Contractor shall be responsible for the control of chemical fumes, gases and other contaminates produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. during the performance of the Contractor's Work to ensure that they do not enter occupied portions of the building or air intakes.

§ 3.4.15 Ventilation During Construction. The Contractor shall provide ventilation of enclosed areas during construction as may be required to permit proper curing and drying out and to prevent excessive humidity moisture and condensation. Ventilation shall be by natural or artificial means as required by conditions involved.

§ 3.4.16 The Contractor shall be responsible to ensure that activities and materials used during the performance of the Contractor's Work that result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured and ventilated in accordance with manufacturers' recommendations before a space can be occupied.

§ 3.4.17 Broken Glass. Each Prime Contractor shall be responsible for all broken, scratched, or damaged glass, which shall be replaced upon completion of the Work. The Contractor shall be responsible for all breakage, scratched or damaged glass, which has been furnished and installed as part of their Contract and existing glass that is broken due to operations under the Contract for Work. No matter by whom or what caused such glass to break, be scratched or damaged, the Contractor shall replace all broken, scratched or damaged glass before completion and acceptance of the Contractor's Work. The responsibility for all broken, scratched, or damaged glass, shall terminate upon acceptance of the Work by the Owner, except as provided in any other Conditions of Contract (Supplementary, Special or Other) or the Specifications with respect to defective materials, workmanship, and guarantee/warranty provisions.

§ 3.4.18 Watertight. From commencement to the completion of the Project, the Contractor shall keep the parts of the Work and the buildings free from accumulation of water no matter what the source or cause of water. During construction, the Contractor shall be responsible for maintaining a watertight structure. This shall include additions and existing buildings. The Contractor shall be responsible for temporary roofing, tarps and other protection at roofs, cavity walls, and other openings. Should the Contractor fail to provide adequate protection, which results in flooding, damage or other disturbance to the existing building, Contractor shall be responsible for all costs associated with clean up and repairs. Inasmuch as flooding and damage have safety implications to the general public, clean up and repairs may be made by the Owner without warning to the Contractor. Administration costs incurred by the Owner, the Construction Manager and Architect will also be back charged to the Contractor. The Contractor, by signing its Agreement with the Owner, agrees to be liable for these costs.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality, new and of recent manufacture, unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements, including

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substitutions not properly approved and authorized, will be considered defective and will be removed and replaced at the Contractor's expense. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment furnished by it.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 Unless otherwise specified elsewhere in the Contract Documents, all Work shall have a Warranty/Guarantee of two (2) years. Warranties and/or guarantees shall become effective on the Date of Substantial Completion of the Work, unless otherwise provided in the Certificate of Substantial Completion. The cost of correcting defective or deficient work, including the cost of damages of any kind sustained by the Owner shall be borne by the Contractor at its sole cost and expense. All corrections to defective or deficient Work, materials, or equipment shall be performed by the Contactor at the convenience of the Owner.

§ 3.5.4 The warranties provided in this Section 3.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law. The warranties required under the Contract Documents, including this Section 3.5, shall be extended to include the performance of any and all items of Work specified under the "proprietary," "patented" and other specified methods as well as procedures specifically required by the Contract Documents thereby not relieving the Contractor of its general warranty obligations. The warranties required under the Contract Documents, including this Section 3.5, shall survive expiration and/or termination of the Contract.

§ 3.5.5 The Contractor shall furnish maintenance and 24-hour call-back service for the equipment provided by it for a period of three (3) months after Final Completion and acceptance of the Work. This maintenance shall include all necessary adjustments, greasing, oiling, cleaning, supplies and parts to keep the equipment in proper operation except such parts made necessary by misuse, accidents or negligence not caused by the Contractor or any of its Subcontractors.

§ 3.5.6 The Contractor shall perform its Work in such a manner as to preserve any and all manufacturer's warranties on materials, equipment, fixtures and/or labor incorporated into the Work. The Contractor will exercise its best efforts to service and to enforce for the benefit of the Owner all manufacturer's warranties on materials, equipment, fixtures and/or labor incorporated into the Work.

§ 3.5.7 The Contractor shall assign to the Owner at the time of Substantial Completion of the Work, unless otherwise provided in the Certificate of Substantial Completion, any and all manufacturer's warranties relating to materials, equipment, fixtures and/or labor used in the Work.

§ 3.5.8 The Contractor warrants good and legal title to all materials, equipment and fixtures installed or incorporated into the Work.

§ 3.6 Taxes

The Owner is exempt from New York State, and Local Sales and Compensation Use Taxes on all supplies and materials incorporated into and becoming an integral component part of the structures, buildings, or real property pursuant to the Contract. Such taxes are therefore not to be included in the Contractor's bid or proposal or Contract Sum. This exemption does not apply to machinery, equipment, tools and other items purchased, leased, rented or otherwise acquired for the Contractor's use in part or entirely in connection with the Work and the Contractor and subcontractors shall be responsible for any and all applicable taxes, including sales and use taxes, on such items. The exemption only applies to materials, machinery and equipment fully incorporated into the Work of the Contractor as accepted by the Architect and the Owner. Upon request, Owner will furnish proof of its exemptions to the Contractor. The Contractor shall pay sales, consumer, use and similar taxes from which the Owner is not exempt for the Work or portions thereof provided by the Contractor that are legally enacted when bids or proposals are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

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§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager and the Architect, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

.1 The Contractor shall promptly deliver copies of permits, fees, licenses, and inspections it obtains for its Work and/or the Project to the Architect and Owner.

.2 If in connection with the Project, the Owner has obtained certain permits, licenses or agreements for the Project, the Owner will furnish copies of these documents to the Contractor. It is the Contractor's responsibility to comply with any conditions or limitations placed on the Project by these permits. The Contractor shall fully cooperate with the Owner in meeting the permit requirements and accommodations of regulatory inspections / directives.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.2.1 If the Contractor fails to give such notices as applicable to the performance of the Work, the Contractor shall be liable for and shall indemnify and hold harmless the Owner against any and all resulting fines, penalties, judgments or damages, including reasonable attorney fees, imposed on or incurred by the parties indemnified, as a result of such failures by the Contractor. The indemnity provided in this Section 3.72 is in addition to the indemnities provided in Section 3.18 of these General Conditions and elsewhere in the Contract Documents and shall survive the termination or expiration of the Contract.

§ 3.7.2.2 In the event any violations are placed upon the Owner or its property by any public authority as a result of actions or omissions of the Contractor, the Contractor shall be solely responsible for such violations and shall bear all costs attributable thereto. Funds in an amount at least sufficient to correct such violations, as determined by the Architect in consultation with the Construction Manager shall be withheld until all such violations are cured to the satisfaction of the issuing public authority.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to (or if Contractor should have known it would be contrary to) applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 7 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or

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features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. To the extent Work is being performed contemporaneously at two different facilities of the Owner, the Contractor shall assign different superintendents to each facility. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.1.1 The Contractor shall employ a superintendent who is able to fluently read and write the English language or shall employ, at its sole cost and expense, the services of a full-time on-site qualified interpreter who can read and write the English language and effectively translate oral and written English communications and documents into the language understood by the superintendent and who will facilitate the superintendent's communications with the Owner, the Architect and other contractors performing the Work of the Project.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed. The superintendent shall be changed upon request of the Owner, for good cause shown.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 Within ten (10) days after being awarded the Contract, the Contractor shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. No revisions to the schedule can extend the time to achieve a milestone date unless the date has been changed by a fully executed Change Order or Construction Change Directive. The

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Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

§ 3.11.1 The Contractor shall make available, at the Project site, the Contract Documents, including Drawings, Specifications, Addenda, Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, Owner, government inspectors and other authorized agencies and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.11.1.1 The Record Drawings shall be prepared and updated during the performance of the Contractor's Work. The prints for Record Drawings will be a set of blank line prints provided by the Architect to the Contractor at the start of construction. The Contractor shall maintain said set in good condition and shall use colored pencils to markup said set in a legible manner to show: (a) deviations from the Drawings made during construction; (b) details in the Work not previously shown; (c) changes to existing conditions or existing conditions found to differ from those shown on any existing drawings; (d) the actual installed position of equipment, piping, conduits, light switches, electrical fixtures, circuiting, ducts, dampers, access panels, control valves, drains, openings and stub-outs and similar elements; (e) architectural and/or structural changes in the design; and (f) such other information as either the Construction Manager, Architect or Owner reasonably may request. At the completion of the Work, Contractor shall transfer all information on Record Drawings to reproducible drawings with new information clouded and noted. Such reproducible drawings shall be stamped with the Contractor's name and "AS BUILT" in the lower right-hand corner. The colored Record Drawings and the as-built reproducible drawings shall be forwarded to the Construction Manager for delivery to the Owner within sixty (60) days of final completion of the Contractor's Work.

§ 3.11.2 Final payment will not be due and owing to Contractor until the Record Drawings are received in a form satisfactory to the Construction Manager, Architect and the Owner (and all other closeout requirements are met).

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

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§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect. If the Contractor performs work without approvals, the Contractor does so at its own risk and will be responsible for any costs to correct the work and for any damages incurred by the Owner or other contractors.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 Upon the Architect's rejection of the Contractor's Shop Drawings, Product Data, Samples or other similar submittals, the Contractor shall review the rejection and re-submit such Shop Drawing, Product Data, Sample or other similar submittals in accordance with the Architect's instruction. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by a design professional appropriately registered

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and/or licensed in the State of New York, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

§ 3.12.10.3 When professional certification of performance criteria of materials, systems or equipment is required of the Contractor, the Architect shall be entitled to rely in a reasonable and professional fashion upon the accuracy and completeness of such calculations and certifications, provided, however, if the Architect, in its reasonable and professional judgment considers it advisable, the Architect shall verify the accuracy and completeness of any and all such calculations and/or certifications. In the event any and all such calculations and/or certifications are found to be inaccurate and/or incomplete by the Architect, the Contractor shall assume full responsibility and shall bear all costs attributable or related thereto, including, without limitation, the expense of the Architect's additional services associated with the verification of such calculations and/or certifications and the expense of the Architect's additional service made necessary by the failure of such calculations and/or certifications to be accurate or complete.

§ 3.12.11 If the Architect and Construction Manager are required to review any Contractor submittal more than twice, the Contractor shall bear the cost and expense associated with such additional review.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.13.3 The Contractor's right to enter and use of the Owner's premises arises solely from the permission granted by the Owner pursuant to the Contact between the Owner and the Contractor. This permission shall be deemed to be withdrawn upon termination of the Contractor's Contract with the Owner.

§ 3.13.4 The Contractor will ensure that the acts and omissions of the Contractor and those the Contractor engages to perform Work on the Project will not cause the Owner's school buildings to fail to comply with the minimum requirements to maintain a certificate of occupancy.

§ 3.13.5 The Contractor will ensure that the acts and omissions of the Contractor and those the Contractor engages to perform Work on the Project will not cause the Owner's school buildings occupied during the Project to deviate from required health, safety and educational capabilities when classes are in session.

§ 3.13.6 The Contractor shall provide all temporary access walkways, both interior and exterior, temporary partitioning and the like necessary to complete the Contract's Work without interfering with the Owner's operations. The Contractor shall maintain in an unobstructed condition all entrances and/or exits from existing buildings on the Owner's property.

§ 3.13.7 Without prior approval of the Owner or Construction Manager, the Contractor, its employees, subcontractors and others performing work on the Contractor's behalf shall only use those facilities at the Project site(s) or in any existing buildings at the Project site(s) designated for the Contractor's use by the Owner and/or

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Construction Manager, including, without limitation, lavatories, toilets, entrances, and parking areas. In general, workers may not use corridors, stairs or elevators designated for use by the Owner's students and staff.

§ 3.13.8 Without limitation of any other provision of the Contract Documents, the Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project Site(s) and its building(s), as revised from time to time.

§ 3.13.8.1 The Contractor shall immediately notify the Owner, in writing, if during the performance of the Work, the Contractor believes compliance with any portion of the rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulation.

§ 3.13.8.2 The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project Site(s) and its building(s).

§ 3.13.8.3 The rules of conduct for the Contractor and those engaged by the Contractor to perform its Work (e.g., employees, Subcontractors, suppliers, etc.) while on the Owner's property, include but are not limited to:

.1 In accordance with federal and state law, smoking (including electronic cigarettes), vaping, and the use of tobacco products, as well as any use and/ingestion of cannabis products, are prohibited within all buildings of the Owner and on all school property of the Owner and within 100 feet of all entrances, exits and boundaries of elementary and secondary schools at all times.

.2 No drinking of alcoholic beverages or use of controlled substances are allowed on school property. No reporting to Work impaired by alcohol or controlled substances. The Contractor shall be responsible to ensure that its employees and its Subcontractors' employees are not impaired to any degree.

.3 All Contractors, Subcontractors, suppliers and their employees are prohibited from conversing with the Owner's employees, students and volunteers. Any construction employees found doing so will be removed from the Owner's property (including but not limited to the Project site(s)). No communication between construction workers and suppliers and Owner's students will be tolerated.

.4 All Contractors, Subcontractors, suppliers and their employees are to refrain from using indecent language. All doing so will be removed from the site. Artwork and decorations found on vehicles belonging to Contractor's or Subcontractor's employees parked on or near the school property which contain indecent language or pictures shall either be covered or removed from the locations.

.5 All construction personnel shall wear photographic identification badges at all times while on the Owner's property. The photographic identification badges shall be provided by the Contractor and shall be approved by the Owner. These badges shall be worn so as to be readily and easily visible. Each person seen without a photo identification badge (or otherwise failing to comply with this requirement in the opinion of the Owner) may be ordered to leave the Owner's property. No warnings shall be necessary. The Contractor who directly or indirectly (through a Subcontractor) employs the individual failing to comply with these identification badge requirements shall be solely responsible for making up and paying for any loss of production or required progress in the Work resulting from this action (including any claims by other Contractors dependent on the Work of the Contractor engaging the offending person(s)). Any action taken to enforce this requirement shall not be construed by a Contractor or its Subcontractors or suppliers as the basis for a claim (for either time or money) for delay to the Work of the Contractor, its Subcontractors or Suppliers.

.6 All Contractors, Subcontractors, suppliers and their employees at the Project site(s) are to wear shirts, long pants, and proper footwear.

.7 The use of radios, tape players and the like is prohibited within the Project site(s) and Owner's buildings.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents. In the event of multiple Prime Contractors, each Prime Contractor (and their respective Subcontractors) shall be responsible for

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their own cutting and patching, except for locations identified in Section 011000 as the responsibility of another. All finish patching shall be accomplished by the trades normally doing said finish work.

§ 3.14.2 No Contractor will damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.14.3 All cutting and patching work shall be done by the Contractor (or through the appropriate Subcontractor) using only people skilled and experienced in cutting and patching. Patches in finish surfaces shall match the adjacent surfaces in material, finish, detail, and quality. Patches in fire rated construction or construction required to be smoke tight shall be made in conformance with assemblies designed and tested by agencies recognized by governing codes. Any UL rated fire-safe materials, flanges, or other materials required by Code, the Contract Documents, or manufacturer's installation instructions for devices penetrating the affected work shall be applied and installed by an approved firestop subcontractor or qualified personnel from the applicable trade.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 On a daily basis, the Contractor shall clean the areas in which it has performed Work and shall remove all waste, materials, rubbish, tools, construction equipment, machinery, and surplus materials. The Contractor shall broom sweep all construction areas every day. The Construction Manager and/or the Owner may perform an inspection each afternoon to determine that the Work areas of the Contractors have been properly cleaned. In the event the work areas are not cleaned, the Construction Manager and/or the Owner will advise the Contractor to provide cleaning as required herein. Thereafter, without prior notice to the Contractor, the Owner may do so or engage the services of a cleaning company to do so. The cost of such cleaning will be charged to the Contractor.

§ 3.15.4 Final Cleaning.

§ 3.15.4.1 Clean each surface or unit to the condition expected in normal commercial building cleaning. Comply with manufacturer instructions. Complete the following cleaning operations before requesting inspection for Certificate of Substantial Completion.

1. Clean transparent materials including glass in door windows. Replace any damaged glass.
2. Clean exposed finishes to a dust-free condition, free of stains, fingerprints, films, soil, dirt, and similar foreign substances. Clean floors as recommended by the manufacturers if new, existing carpeted floors will be vacuumed and wood, ceramic tile and vinyl tile floors will be mopped.
3. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

§ 3.15.4.2 Remove temporary protection and facilities installed for protection of work during construction unless otherwise directed by the Owner or the Architect.

§ 3.15.4.3 Comply with authorities having jurisdiction over the Owner's property and/or the Work that have safety standards for cleaning. Do not burn waste materials on Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems on or adjacent to the Owner's property. Remove waste materials from the site and dispose of them in a lawful manner.

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§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and the officers, directors, agents and employees of any of them from and against claims, damages, losses, suits, obligations, fines, penalties, costs and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, suit, obligation, fine, penalty, cost or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property to the extent caused by the acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, suit, obligation, fine, penalty, cost or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18. The obligations in this Section 3.18 shall survive the expiration and/or termination of the Contract.

§ 3.18.1.1 The Owner's right to indemnification shall in no way be diminished, waived or discharged by the exercise of any other remedy provided by the Contract Documents or by law. The Owner may withhold from an offending Contractor's Contract Sum an amount sufficient to cover such damage and all expenses and costs associated with the damage sustained.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under this Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

§ 3.18.3 The Contractor's indemnity obligations under this Section 3.18 shall, but not by way of limitation, specifically include all claims, fines, penalties and judgments which may be brought or imposed against the Owner, the Construction Manager, the Architect and their respective consultants, officers, directors, officials, employees, servants and agents under any applicable statute, rule, regulation or ordinance, including the New York State Labor Law, the New York State Occupational Safety and Health Act, the Federal Occupational Safety and Hazardous Act and similar laws of other governmental bodies having jurisdiction over the Owner's property or Project due to the method of execution of the Work of the Contractor or its Subcontractor(s) or their respective officers, directors, employees, contractors, servants and agents.

§ 3.18.3.1 The Contractor shall indemnify and hold harmless the Owner, the Owner's Board of Education, the Construction Manager and the Architect and their respective consultants, officers, directors, officials, employees, servants and agents of and from any and all liability for violation of any statute, rule, regulation or ordinance applicable to the Contractor's Work and shall defend any claims or actions which may be brought against such parties as a result thereof.

§ 3.18.4 Whenever any party to the Contract is required in words or substance to indemnify or hold harmless another party, whether or not the following is expressly included in whole or in part in the paragraph or section with regard

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to such particular indemnification and hold harmless provision, such indemnification and hold harmless provision shall include, but not be limited to, the payment or reimbursement of all judgments, settlements, claims, damages, losses, fees costs and expenses and litigation costs and expenses, including but not limited to, the reasonable fees of its attorneys and witnesses.

§ 3.18.5 The Contractor's obligations under this Section 3.18 are in addition to and in no way limit or abrogate the indemnity obligations included in Section 3.7 of these General Conditions or in any other provision of the Contract Documents (which includes but is not limited to these General Conditions).

§ 3.18.6 The Contractor also shall defend, indemnify and hold harmless the Owner, the Owner's Board of Education, the Construction Manager, and the Architect and their respective consultants, officers, directors, officials, employees, servants and agents (the "Indemnitees"), at the Contractor's sole expense, against any actions, lawsuits or proceedings brought against the Indemnitees as a result of a public improvement lien filed against the payments due the Contractor under the Contract for this Project. The Contractor also agrees to pay any judgment, lien and attorneys' fees resulting from any such actions, lawsuits or proceedings. The Contractor further agrees to indemnify and hold Indemnitees harmless against any public improvement lien or claims of lien asserted against the Contractor under the Contract for this Project.

§ 3.18.7 Whenever the Contractor is required in this Section 3.18 or the Contract Documents to defend the Owner, Indemnitees against any claim, action, or proceeding, in the event the Contractor shall fail or refuse to defend such Indemnitees, the Contractor shall be liable to the Indemnitees for all costs they incur in defending such claim, action or proceeding and all costs, including attorneys' fees, the Indemnitees incurred to recover such defense costs from the Contractor.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work. The Architect will recommend to the Owner and the Construction Manager what actions are needed to remedy the defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

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§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

As clarification to the above lines of communication, it is mandated that any direct communications between the Owner and the Contractor having an effect on the performance or administration of the Contract shall be made or confirmed in writing, with copies to the Architect and Construction Manager, and any such communications that result in a modification to the Contract be documented appropriately as set forth in Article 7 herein. Further, any communications between the Construction Manager and/or Architect and Subcontractors shall be confirmed in writing to the Contractor.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager or Architect considers it necessary or advisable, the Construction Manager and the Architect each individually have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

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§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Architect will prepare Change Orders and Construction Change Directives.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents. Such interpretations may, at the Architect's option, be issued in the form of additional drawings or instructions or both indicating in greater detail the construction or design of the various parts of the Work; such drawings or instructions may be effected by Field Order, Construction Change Directive, or other notice to the Contractor, and provided such drawings and/or instructions are, in the opinion of the Architect, reasonably consistent with the previously existing Contract Documents, the Work shall be executed in accordance

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with such additional drawings and/or instructions without additional cost or extensions of Contract Time. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions that are consistent with the intent of, and reasonably inferable from, the Contract Documents.

§ 4.2.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents and accepted by the Owner.

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information. If no agreement is made concerning the time within which interpretations or information requested of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site or to otherwise furnish labor, material, equipment, fixtures, or other services with respect to a portion of the Work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site or to otherwise furnish labor, material, equipment, fixtures, or other services with respect to a portion of the Work. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager, for review by the Owner, Construction Manager and Architect, the names, addresses and telephone numbers of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.1.1 Subcontractors will not be acceptable unless, when requested by the Construction Manager or the Architect, evidence is furnished that the proposed Subcontractor has satisfactorily completed similar subcontracts and has the necessary experience, personnel, equipment, plant and financial ability to complete the subcontract in accordance with the intent of the Contract Documents.

§ 5.2.1.2 Failure to object to a Subcontractor shall not constitute a waiver of the requirements of the Contract Documents and all labor and materials furnished shall conform to such requirements.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no

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reasonable objection. No increase in the Contract Sum or Contract Time shall be allowed where a proposed Subcontractor is rejected by the Construction Manager, Architect or Owner who is (1) deemed unqualified to perform the particular work subcontracted by the Contractor, (2) does not have the necessary experience, personnel, equipment, plant and financial ability to complete the subcontract or (3) has a history of poor performance in work of similar nature. Upon receipt of a rejection of a Subcontractor by the Construction Manager or the Architect, the Contractor shall have the right to request a meeting with the Construction Manager, the Architect and the Owner to discuss the reasons it believes the proposed Subcontractor is qualified to perform the Work. Upon review of such reasons, the Construction Manager and the Architect will reconsider the rejection of the Subcontractor and will advise the Contractor if there is any change to the rejection following such review. The Construction Manager and the Architect's determination upon such review shall be final and binding on the Contractor and its Subcontractor and the Contractor hereby waives any and all claims it and its Subcontractor might have against the Owner and/or the Architect concerning the rejection of such Subcontractor and the Contractor shall require its Subcontractors to execute a similar waiver in their agreements with the Contractor.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.2.5 All subcontracts over $5,000 must be in writing. Fully executed copies of all subcontracts shall be provided to the Owner, through the Construction Manager, including but not limited to all addenda, appendices and/or exhibits including scope of work sheets to the subcontracts, before work by such subcontractors commences. Upon request, any Purchase Orders for materials, equipment or supplies related to the performance of the Work shall be furnished by the Contractor to the Owner.

§ 5.3 Subcontractual Relations

§ 5.3.1 By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.2 The agreement between the Contractor and Subcontractor shall not provide, nor shall the Contract Documents be deemed to provide, any rights, remedies or redress by the Subcontractor(s) against the Owner.

§ 5.3.3 The Contractor shall promptly notify the Owner, through the Construction Manager, and the Architect of any material defaults by any Subcontractors and/or whether it has terminated its agreement with any of its Subcontractors for any reason.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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Upon such acceptance of the assignment of a subcontract, the Owner shall only be required to compensate the Subcontractor for compensation accruing to the Subcontractor for Work done or materials delivered after the earlier of (a) the date on which the Owner accepts the assignment of the subcontract and (b) the last date covered by the most recent payment application of the Contractor certified for payment by the Construction Manager and the Architect. All sums due and owing by the Contractor to the Subcontractor prior to this time shall constitute a debt between the Subcontractor and the Contractor. When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract hat accrue subsequent to the Owners acceptance of the assignment.

§ 5.4.2 It is agreed and understood that the contingent assignment of subcontracts is part of the consideration to Owner for entering into the Contract with Contractor and may not be withdrawn prior to Final Completion or Termination of all remaining Work of the Contractor pursuant to Section 14.4 hereof. Contractor shall deliver an acknowledgement in form and substance satisfactory to Owner from each Subcontractor of the contingent assignment of subcontracts described herein no later than ten (10) days after the date of execution of each subcontract.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 All Contractors, including the Owner's Separate Contractors, shall cooperate with each other in the installation and construction of each Contractor's work and in such manner as the Owner and/or the Architect may direct. All Contractors shall control and coordinate the work of their Subcontractors, if any. When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules.

§ 6.1.3 **The award of more than one Contract for the Project requires sequential or otherwise interrelated contractor operations and may involve inherent delays in the progress of any individual Contractor's work. Accordingly, the Owner and/or Construction Manager cannot guarantee the unimpeded operations of any Contractor. Each Contractor acknowledges these conditions and understands that the Contractor shall bear the risk of all ordinary delays caused by the presence or operations of other contractors engaged upon the Project and ordinary delays attended upon the approved Construction Schedule.§ 6.2 Mutual Responsibility**

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.1.1 The Contractor agrees to cooperate with other contractors performing Work on the Project and the Contractor shall:

- **.1** not interfere with the erection, installation or storage upon the Project sites of any work, materials, supplies, or equipment of other contractors and shall properly connect and coordinate its work therewith;
- **.2** not commit or permit any act which will interfere with the performance of the work of any other contractor performing Work on the Project; and
- **.3** immediately notify Owner, Construction Manager and Architect if Contractor sustains any damage through any act or omission of another contractor (or their respective subcontractors) performing Work at the Project sites.

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§ 6.2.1.2 The Contractor shall coordinate and supervise the work performed by its employees, Subcontractors and all others engaged directly or indirectly by the Contractor to perform the Work; so, the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work.

§ 6.2.1.3 In the case of interference between the operations of different Contractors, the Architect and/or Construction Manager will be the sole judge of the rights of each Contractor and shall have the authority to decide in what order the Work may proceed, and in all cases such decision shall be final and binding on all parties.

§ 6.2.1.4 The Contractor, including its Subcontractors, shall keep itself informed of the progress of other contractors and shall notify the Architect and the Construction Manager immediately in writing of the lack of progress on the part of another contractor where such lack of progress will interfere with the Contractor's own operations. Failure of the Contractor to keep informed of the work progressing on the Project and failure to give notice of the lack of progress by others shall be construed as acceptance by the Contractor of the status of the Work as being satisfactory for proper coordination with the Contractor's own work.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractor or to another Contractor, because of the Contractor's delays, improperly timed activities or defective construction. Failure to provide such reimbursement shall entitle the Owner to deduct such costs from the payment(s) due the Contractor until the Owner has fully recovered such costs. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5. The Contractor shall promptly correct discrepancies or defects in its Work which have been identified by other Contractor(s) as affecting proper execution and results of the Work of such other Contractor(s).

§ 6.2.5 The Owner, Separate Contractors, and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up (with its own forces or others retained by the Owner) and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible. If the Owner is not reimbursed promptly for such costs, the Contractor's share of such costs shall be deducted from the next payment to the Contractor.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract and without notice to the Contractor's Surety, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

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§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone. No Change Order or Construction Change Directive shall become effective unless and until it is signed by the Owner.

§ 7.1.2.1 A change in the Contract Sum or the time for performance of the Work will be accomplished only by Change Order or, when no agreement can be reached with the Contractor, by a Construction Change Directive. Additional work performed without authorization of a Change Order or a Construction Change Directive will not entitle the Contractor to an increase in the Contract Sum or an extension of the Contract Time. No course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim against the Owner for an increase in the amount due under the Contract Documents or a change in any time period provided for in the Contract Documents. No amount in excess of the Contract Sum stated in the Contract shall be payable by the Owner to the Contractor for performance of Work without a written and fully executed Change Order or Construction Change Directive.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.1.4 When the Owner or Architect requests that the Contractor perform work which is not included in the Contract Drawings or Specifications and which will result in additional cost to the Owner, the Construction Manager will request that the Contractor submit its proposal for performing such additional work. The Contractor shall submit its proposal to the Construction Manager for review. The Contractor's proposal shall include a complete itemization of the costs associated with performing the additional work, including labor and materials, and the additional time required to perform the additional work. All proposals submitted by the Contractor without a complete itemization will be returned to the Contractor for re-submission with the required information.

§ 7.1.4.1 The Contractor must submit with its change order proposals actual invoices reflecting actual additional costs associated with increasing the amount of the Contractor's payment and performance bonds.

§ 7.1.5 For any work performed by the Contractor's own forces, fifteen percent (15%) for overhead and profit will be allowed for labor and material related costs. Costs to which overhead is applied shall be limited to cost of labor and materials, including the cost of delivery. Under no circumstances shall any change order proposal exceed fifteen percent (15%) for overhead and profit.

§ 7.1.5.1 The Contractor's Subcontractor's proposal for any work it is to perform in connection with the additional work shall only include ten percent (10%) for the Subcontractor's overhead and profit for the Subcontractor's labor and material costs, including costs of delivery of materials. The Contractor is entitled to five percent (5%) overhead and profit on work performed by its Subcontractor.

§ 7.1.5.2 The Contractor and its Subcontractors shall not be entitled to recover overhead and profit on the rental value of equipment and machinery.

§ 7.1.5.3 Notwithstanding the foregoing, work which is performed pursuant to an allowance included in the Contractor's base Contract, the restrictions in the provisions of Section 3.8.2 of these General Conditions on payment for such work are controlling.

§ 7.1.6 When the Owner or Architect seek to remove portions of the Contractor's Work originally included in the Contract Drawings and Specifications, the Construction Manager will request that the Contractor submit its proposal for the reduction in the Contract Sum resulting from the removal of a portion of the Contractor's scope of Work. The Contractor's proposal shall include a complete itemization of the savings associated with removing such work, including labor and materials. The Contractor shall not be entitled to retain its overhead and/or profit for such work nor shall any of its Subcontractors which were to perform any of the work being removed from the Contractor's scope of Work. Additionally, the Contractor shall reflect the reduced cost, as a result of such change, of premiums on the bonds that are required by the Contract Documents.

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§ 7.1.6.1 When both additions and credits related to Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease with respect to the change in Contract Sum.

§ 7.1.6.2 The Owner may in its sole discretion deduct and/or reduce the scope of the Contractor's Work with or without any specific reasons therefore.

§ 7.1.7 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted. The Owner also reserves the right to reject any unit price which is unreasonable or unbalanced, as compared with prevailing costs, or as compared with the unit prices submitted by other bidders for the Project. Approved unit prices quoted shall include all profit, overhead, bonds, insurance, labor, materials, equipment, tools, applicable taxes necessary to complete the work item and shall apply to all work added or work deducted.

§ 7.1.8 Overtime, when specifically authorized by the Owner in writing, and not as a corrective measure or extraordinary measure by the Contractor to expedite the progress of construction as ordered by the Owner based on its determination that the performance of the Work has not progressed to the level of completion required by the approved Schedule, shall be paid for by the Owner on the basis of premium payment only, plus the cost of insurance and taxes based on the premium payment period. Overhead and profit will not be paid by the Owner for overtime.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Each Change Order will include all costs related thereto, including all overhead, miscellaneous expenses, and incidentals.

§ 7.2.3 A fully-executed Change Order shall constitute a final settlement of all Claims and matters relating to the change in the Contractor's Work that is the subject of the Change Order, including but not limited to, all direct and indirect costs associated with such change (including, without limitation, all costs of associated delay, interference, acceleration, inefficiency, overhead, as well as costs of material, labor and supervision) and any and all adjustments to the Contractor's Contract Sum, Contract Time and the construction schedule. Payment of a Change Order shall constitute accord and satisfaction of all Claims of the Contractor in connection with the change or changes to the Contract addressed by the Change Order and it is understood and agreed that a signed Change Order shall be the complete and fully integrated agreement for all related costs and there are no oral or written understandings, reservations, representations or agreements, directly or indirectly, connected with the Change Order and not affirmatively stated on the signed Change Order.

§ 7.2.4 Upon the Contractor's completion of the Change Order work, and prior to payment being made to the Contractor for such work, the Contractor shall provide the Owner, through the Construction Manager, with the following information:

.1 Certified payrolls itemizing the labor actually utilized in connection with the Change Order work;
.2 Copies of invoices for materials used in connection with the Change Order work.; and
.3 Copies of invoices from Subcontractors supplying work in connection with the Change Order work.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order. If the Owner and the Contractor cannot agree that certain work properly forms the basis for a Change Order or on the sum by which the Contract is to be increased or reduced based upon changes to the scope of Work or the amount of time by which the Contract Time is to be increased or reduced based upon a change to the scope of the Work, the Architect or Construction Manager shall issue a Construction Change Directive signed by the Owner, Construction Manager and Architect reflecting the addition to, or removal of, or clarification of the scope of Work.

§ 7.3.2.1 The Construction Change Directive shall include: (a) a description of the work being added to, removed from, or clarified as part of the Contractor's scope of Work; (b) the amount the Owner has determined to be the cost associated with the additional work (as those costs are identified and limited in Section 7.3.4) or the credit associated with the removal of such work from the scope of the Contractor's Contract until the Owner and the Contractor agree upon the increase or decrease in the Contractor's Contract Sum, or until a claim filed by the Contractor has been determined or that no increase or reduction of the Contract Sum is warranted because the work that is the subject of the Construction Change Directive is included in the Contractor's original scope of Work; and (c) the extent to which the Contract Time will be adjusted as a result of any change in the scope of Work.

§ 7.3.2.2 In the case of additional work to be performed by the Contractor, the Contractor shall perform such additional work in an expeditious manner so as not to delay its Work or the Work of any other contractor at the Project site(s) and the Contractor shall keep records of its performance of such additional work.

§ 7.3.2.3 In the case of work to be deducted from the scope of the Contractor's Work, the Contractor shall refrain from taking any steps in connection with performing the work associated with the deduction and/or reduction of the scope of the Contractor's Work.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.1.5 . In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- **.1** Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- **.2** Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- **.3** Rental costs of machinery and equipment, exclusive of hand tools, rented from others (there shall be no rental payments for the Contractor's own machinery and equipment);
- **.4** Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- **.5** Additional costs of supervision and field office personnel directly attributable to the change if and only if the change requires an extension of time beyond that time indicated in the Contract.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15. Any claims related to a Construction Change Directive must be filed in accordance with the requirements set forth in Article 15 of these General Conditions. Failure to timely file any claim in accordance with the requirements set forth therein shall constitute a waiver of such claim.

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§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. Absent such belief, the Contractor shall perform the work included in such orders so as to cause no delay to its work and/or the work of other contractors engaged by the Owner in connection with the Project. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that the Contractor contends such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.1.5 The Date of Final Completion of the Work is the date all of the Work required under the Contract Documents is completed, all required materials and documents have been delivered to the Owner, and all applicable licenses, permits, certificates, or approvals have been obtained for the Owner's beneficial use of the Project.

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§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not commence, except by agreement or instruction of the Owner in writing, the Work prior to submitting to the Owner, through the Construction Manager, payment and performance bonds compliant with the Contract Documents and proof of having in effect the insurance required to be furnished by the Contractor pursuant to the Contract Documents that is acceptable to the Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The Contractor shall cooperate with the Owner, Architect, and other Contractors on the project in making every reasonable effort to reduce the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 In the event the Owner determines that the performance of the Contractor's work, as of a milestone date, has not progressed or reached the level of completion required by the Contract Documents, the Owner, through the Construction Manager, shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of the construction, including, without limitation, (1) working additional shifts or overtime, (2) supplying additional manpower, equipment, and facilities and (3) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the Contractor progresses its Work in compliance with the construction schedule and the Contract Documents. The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule.

§ 8.3.1.1 The Contractor shall not be entitled to an adjustment in its Contract Sum in connection with Extraordinary Measures ordered by the Owner under or pursuant to this Section 8.3.1.

§ 8.3.1.2 The Owner may exercise the rights provided to the Owner under or pursuant to this Section 8.3.1 as frequently as the Owner deems necessary to ensure that the Contractor's performance of its Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

§ 8.3.1.3 The Owner reserves the right to withhold payment from the Contractor until such time as the Contractor submits a daily schedule showing work to be again on schedule with the Construction Schedule and/or until its Work is being installed according to the Project construction schedule, without additional cost to the Owner.

§ 8.3.2 The Contractor shall achieve Substantial Completion and Final Completion of its Work in accordance with the schedule for the work set forth in the Contract Documents. Substantial Completion, Final Completion and other Milestone Dates are dates critical to the Owner's operations and are of the essence.

§ 8.3.2.1 In the event the Contractor fails to complete all Work by the scheduled completion dates, without prior written permission of the Owner, the Contractor will not be permitted to perform any work when school is in session. All remaining work must be performed after school hours, on Saturdays, on Sundays, on holidays or during other times when school is not in session at no additional cost to the Owner. In addition to damages incurred by the Owner in connection with the Contractor's delay, the Contractor shall be liable for all costs incurred by the Owner to provide the services of the Architect, Construction Manager and the Owner's staff as needed to make the Owner's facilities accessible to the Contractor and to perform inspections during such hours.

§ 8.3.3 Absent (a) uncontemplated acts of God, war, or terrorism, fires, floods or (b) acts or omissions of the Owner, Construction Manager or Architect that constitute fraud or active interference with the Contractor's performance of the Work that continues after the Contractor furnishes the Owner with three (3) days' written notice of such interference, the Contractor agrees the Owner shall not be liable to the Contractor and/or any subcontractor for claims or damages of any nature caused by or arising out of delays. Absent those circumstances, the sole remedy against the Owner for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth herein. Except to the extent, if any, expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any claim for damages for delay, including, but not limited to, those resulting from the following as they are agreed to be foreseeable: increased labor or material costs; unavailability of materials and/or equipment; Owner's school schedule; directions given or not given by the

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Owner or Architect, including scheduling and coordination of the Work; or the Architect's preparation of Drawings and Specifications or review and/or approval of Shop Drawings, submittals, samples and the Architect's responses to requests for information. The Contractor agrees that its sole right and remedy therefor shall be an extension of time, if appropriate.

§ 8.3.3.1 The Owner's exercise of any of its rights or remedies under the Contract Documents (including, but not limited to, agreeing to change orders, issuance of Construction Change Directives, or directing Extraordinary Measures, or directing correction of the Work), regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be construed as active interference with the Contractor's performance of the Work.

§ 8.3.4 Within ten (10) calendar days from the occurrence of same, the Contractor must apply in writing to the Architect, through the Construction Manager, for an extension of time to complete its Work where the Contractor is delayed in the commencement or progress of the Work as a result of unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by acts of God, war, terrorism, acts of the federal or state government in either their sovereign or contractual capacities, fire, flood, unusual delay in deliveries, quarantine restrictions arising after award of the Contract, freight embargoes arising after award of the Contract, priority or allocation orders duly issued by the federal government after award of the Contract, unusually severe adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.4.1 An extension of time will be granted in accordance with this Article 8 and Article 15 of these General Conditions only after written application is made by the Contractor for the extension. All claims for additional time must be supported by documentation which demonstrates to the Architect, the Construction Manager's and the Owner's satisfaction that the critical path of the Work has been significantly altered by the delays to the activities in question, and that the schedule cannot be maintained by re-ordering other activities within the Project at no cost.

§ 8.3.4.2 Upon receipt of the Contractor's application for an extension of time, the Construction Manager and the Architect will ascertain the facts and extent of the delay and recommend an extension of the time for completion of the Contractor's Work when in their judgement such an extension is justified. Any approval of an extension of the Contractor's time to complete its Work shall be effectuated through a Change Order or, in the absence of the Contractor's an agreement on the extension, a Construction Change Directive.

§ 8.3.4.3 The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by the Contractor, (ii) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay, (iii) is of a duration not less than one (1) day and (iv) the Contractor has made all reasonable effort to recover the alleged lost time. No extension of time will be granted for labor disputes, picketing, hand billing, refusal to deliver, work stoppages due to material procurement delays or other stoppages not authorized by the Owner.

§ 8.3.4.4 An extension of time shall be only for the number of days of delay which the Architect may determine to be due solely to the causes set forth in the application for an extension of time. The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently, but if at all, only the actual period of delay as determined by the Architect. For each day of delay determined by the Architect, the Contractor shall be allowed one day of additional time to complete its Work.

§ 8.3.5 When the Contract Time has been extended, as provided under this Section 8.3, such extension of time shall not be considered as justifying extra compensation to the Contractor for administrative costs or other similar reasons.

§ 8.3.6 The Contractor shall be liable to the Owner for all damages suffered by the Owner as a result of Work stoppages, slowdowns, disputes, strikes or delays related to Contractor's performance of the Work, including damages or delays to the work of other Contractors.

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ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.1.3 Each Application for Payment shall include such documentation, information, instruments, evidence, and materials as Owner, Construction Manager and Architect may deem necessary to substantiate the value of completed work for which payment is sought, including, without limitation, such requisition forms, disbursements requests, indemnities (including evidence of All Risk physical damage insurance coverage on materials and equipment stored off-site), and undertaking as they may specify and an estimate of the total labor done and materials stored at the site (or other location approved in writing by Owner) or installed in the building, less cost for which payment has been made, and also less retainage. All applications for Payment shall be made on and in compliance with a form acceptable to Owner, Construction Manager and Architect.

§ 9.1.4 Notwithstanding anything to the contrary contained in the Contract Documents, the Owner may withhold any payments to the Contractor if and for so long as the Contractor fails to perform any of its obligations or otherwise is in default under any of the Contract Documents; provided, however, that any such hold back shall be limited to an amount sufficient in the reasonable opinion of the Owner to cure any such default or failure of performance by the Contractor.

§ 9.1.5 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work of the Contractor, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that to which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.2 Schedule of Values

§ 9.2.1 Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.2.2 Any schedule of values which fails to include sufficient detail, is unbalanced or exhibits "front loading" of the value of the Contractor's Work will be rejected. If the schedule of values has been approved by the Construction Manager and the Architect and is subsequently used but later is found by the Construction Manager or Architect to be improper for any reason, sufficient funds shall be withheld from the Contractor's future applications for payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Contractor's Work.

§ 9.2.3 The schedule of values shall be drafted so as to reflect multiple construction sites, multiple locations within each site, additions versus renovations of work, and the like so as to satisfy any New York State Education Department requirements for the Project.

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§ 9.2.4 The Schedule of Values prepared by the Contractor must be approved by the Construction Manager and the Architect prior to the payment of any sums due the Contractor.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Each item listed in the Application for Payment shall have a separate amount for labor and a separate amount for material and other costs. The application shall be notarized, and be supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Each Application for Payment shall include the following:

.1 Total value of the work listing labor and material separately;
.2 Percentage of work completed at the time of submission of the Application for Payment;
.3 Value of the work completed at the time of submission of the Application for Payment;
.4 Percent of the previous amount billed;
.5 Previous amount billed;
.6 Current percent completed;
.7 Value of work completed to date;
.8 Percent remaining to be completed by the Contractor; and
.9 Value of work remaining to be completed by the Contractor.

§ 9.3.1.4 Upon submission of its Application for Payment, the Contractor represents that it is entitled to payment in the amount for which it seeks payment.

§ 9.3.1.5 Until Substantial Completion, the Owner shall pay 95 percent of each progress payment amount that is certified as due the Contractor by the Architect and Construction Manager less any retention required for liens and deductions, withholdings and/or set offs authorized by law, the Contract Documents or a governmental agency with jurisdiction over the Contractor and/or the construction.

§ 9.3.1.6 When the Work is substantially completed, the Contractor shall submit to the Construction Manager a requisition for payment of the remaining amount of the Contract Sum. Upon receipt of such requisition the Construction Manager and the Architect shall certify as due the remaining amount of the Contract Sum less two times the value of any remaining items to be completed or corrected and any amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. The Architect, the Construction Manager and the Owner shall have the right, at any time on reasonable notice, to inspect materials and equipment which have been stored off the site in accordance with this paragraph. Payment by the Owner for materials, equipment, fixtures and supplies stored on or off the Project site shall not relieve the Contractor of its responsibility to provide reasonable protection of said materials, equipment, fixtures and supplies until their incorporation into the Work.

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§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.3.3.1 The Contractor shall save and keep the Contract Sum and the Owner's property free from all liens and claims, legal or equitable, arising out of Contractor's work under the Contract Documents. In the event any such lien is filed by anyone claiming by, through or under the Contractor, the Contractor shall remove and discharge same within ten (10) days of the filing thereof. The Contractor further expressly undertakes to defend the Owner, the Architect and the Construction Manager and their respective consultants, officers, directors, officials, employees, servants and agents (the "Indemnitees") at the Contractor's sole expense against any actions, lawsuits or proceedings brought against Indemnitees as a result of liens filed against the Contract Sum, the Work, the site of any of the Work, the Project site and any improvements thereon, payments due the Contractor or any portion of the property of any of the Indemnitees. The Contractor hereby agrees to indemnify and hold Indemnitees harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to lien or claim of lien if the Contractor obtains security acceptable to the Owner or a lien discharge bond that is (1) issued by a surety acceptable to the Owner; (2) in form and substance satisfactory to the Owner, and (3) in an amount required by law to release such lien claim. By posting a lien discharge bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under Section 9.3.3.1 of these General Conditions including without limitation, the duty to defend and indemnify the Owner. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.4 Each Application for Payment shall be accompanied by the following, all in form and substance satisfactory to the Owner, Construction Manager and Architect.

§ 9.3.4.1 A current conditional Contractor's lien waiver and duly executed and acknowledged sworn statement showing all Subcontractors and material men with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any Subcontractor and material men in the requested progress payment and the amount to be paid to the Contractor for all such Subcontractors and material men.

§ 9.3.4.2 Duly executed waivers of mechanic's and material men's liens from all Subcontractors and, when appropriate, from material men and lower tier Subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or persons in any previous Application for Payment.

§ 9.3.4.3 All information and materials required to comply with the requirements of the Contract Documents or reasonably requested by the Owner, Construction Manager or the Architect.

§ 9.3.4.4 All Applications for Payment must be accompanied with certified payrolls for all Contract Work performed. In addition, each Contractor and sub-contractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under penalties of perjury. The Owner shall be required to receive and maintain such payroll records. The original payrolls or transcripts shall be preserved for three years from the completion of the Work on the awarded project. An out of state contractor must post a wage rate schedule at the job site.

§ 9.3.5 Applications for Payment that, when received, are missing information or required documentation will be rejected by the Architect and will not be considered for payment by the Owner or Architect until resubmitted with all required information and documents.

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§ 9.4 Certificates for Payment

§ 9.4.1 The Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 The Contractor shall be required to check record drawings each month. Written confirmation that the record drawings are "up-to-date" shall be required by the Architect and the Construction Manager before certification of the Contractor's monthly payment application will be provided..

§ 9.4.3 The Construction Manager's certification of an Application for Payment shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

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.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor or other Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
.7 failure to carry out the Work in accordance with the Contract Documents;
.8 receipt by the Owner of a notice of withholding from the New York State Department of Labor or other administrative agencies having jurisdiction over the Project;
.9 receipt by the Owner of Notice of Public Improvement Lien claiming sums owed by Contractor and/or one of its Subcontractors;
.10 failure of the Contractor and/or its Subcontractors to comply with the requirements for maintaining record drawings;
.11 failure of the Contractor to comply with applicable federal, state or local statutes, regulations, and/or laws, including, without limitation, laws and regulations applicable to the provision of certified payrolls;
.12 failure of the Contractor to provide executed performance and payment bonds and a current certificate of insurance and endorsements;
.13 reasonable evidence that the Work has not progressed as indicated on the Application for Payment;
.14 the Architect and/or Construction Manager's discovery or observation of work which has been previously paid for by the Owner which is defective and/or incomplete;
.15 the amount requested exceeds the value of the percentage of work completed by the Contractor at the Project site(s); or
.16 such other acts and/or omissions by the Contractor in connection with the performance of its Work that do not comply with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld. The Owner shall not be deemed in default by reason of withholding payment while any conditions described in Section 9.5.1 of these General Conditions remain.

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.2.1 The Contractor shall indemnify and hold the Owner harmless from laborers, mechanics and materialmen liens upon the Owner's Project funds, properties or the premises upon which the work is located, arising out of the work performed or materials furnished by the Contractor or any of its Subcontractors or any material suppliers under the Contract.

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§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner through the Construction Manager or directly has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided for payments to Subcontractors in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. Pursuant to applicable law or court order, when permissible, the Contractor may substitute a surety bond for the Project funds or property against which the lien or other claim for payment has been asserted.

§ 9.6.9 In the event a Subcontractor and/or material supplier files with the Owner a public improvement lien, the Owner shall withhold payment on previously certified applications for payment which have not yet been paid or subsequent applications for payment submitted by the Contractor an amount equal to 150% of the amount set forth in such public improvement lien. This provision is in addition to and does not supersede the indemnity provisions set forth in Section 9.6.8 and in Section 3.18 of these General Conditions.

§ 9.6.9.1 The Owner may release any payment withheld due to the filing of a public improvement lien after the lien is discharged by the Contractor or released by the Lienor. Such a lien may be discharged by the Contractor providing a lien bond to the Owner, which is: (1) issued by a surety acceptable to the Owner, (2) in form and substance satisfactory to the Owner, and (3) in an amount not less the 110% of such lien claim. The cost of the premiums for any such bond posted shall be borne solely by the Contractor. By posting a lien bond, however, the Contractor shall not be relieved of its obligations pursuant to these General Conditions, including but not limited to the indemnity provisions set forth in Section 9.6.8 and in Section 3.18 of these General Conditions.

§ 9.6.10 The Contractor may not assign any monies due or to become due to it pursuant to its Contract with the Owner without the Owner's prior written consent. Any such assignment shall be in a form acceptable to the Owner. If the Contractor attempts to make such an assignment without such consent from the Owner, the Contractor shall nevertheless remain legally responsible for all obligations under its Contract with the Owner.

§ 9.6.11 No partial payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or relieve the Contractor, Subcontractor or Supplier of any of its obligations under the Contract Documents. The Owner shall make no payment until the Owner has received from the Contractor a release of liens from the Contractor for the Contractor and all Subcontractors for the portion of the Work covered by such payments. Notwithstanding the foregoing, the Owner may refuse to make payment on any Certificate for Payment (including, without limitation, the Final Certificate for Payment) due to any default in the

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Contract, including, but not limited to those defaults set forth in Sections 9.5.1.1 through 9.5.1.16 of these General Conditions. The Owner shall not be deemed in default by reason of withholding payment while any of such defaults remain uncured.

§ 9.7 Failure of Payment

§ 9.7.1 If the Construction Manager and Architect do not issue a Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is code compliant and ninety-eight (98%) percent complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion. If the Architect and/or the Construction Manager are required to inspect the Contractor's work more than twice, the Contractor shall reimburse the Owner for the cost of the Architect's and the Construction Manager's services for the additional inspections.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Architect will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.4.1 For any incomplete or defective work at the time of Substantial Completion, the Owner will retain the monetized value of the remaining work and corrective work, i.e. "punch list", times 200 percent as determined by the Architect which will be released upon a determination by the Architect that the work has been completed to the Architect's satisfaction.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage, provided such occupancy or use is consented to by the insurer and authorized by public authorities having

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jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents. In addition, such occupancy will not determine when Substantial Completion has been reached.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. Before the Project or Work is found to be finally complete, the Owner must obtain an unconditional Occupancy Permit or Certificate of Compliance from NYSED and any other authority having jurisdiction over the Project.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, , (6) documentation required by the Contract Documents, (7) As-Built/Record Drawings of the Work as constructed, (8) all required procedures manuals, operation and maintenance manuals and spare parts, and (9), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. If the documentation required in this Section has not been submitted within ninety days of the date of Substantial Completion, the Owner will obtain the same through whatever means necessary. The Contractor shall be responsible for and must reimburse the Owner for all expenses incurred by the Owner in securing the documentation.

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§ 9.10.2.1 All warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Construction Manager as part of the final Application for Payment. The Architect shall not issue the Final Certificate for Payment until all warranties and guarantees have been received, accepted and approved. The Architect shall not issue the Final Certificate for Payment until the following have occurred:

.1 Contractor has prepared and delivered manuals to the Construction Manager covering full operating and maintenance instructions for all building systems, elements, mechanical and electrical apparatus, and the like;

.2 the Owner has received the final certificate of occupancy for the Project or that portion of the Project which encompasses the Work of the Contractor;

.3 the Project or that portion of the Project which encompasses the Work of the Contractor has been completed and accepted; and

.4 all procedures regarding final payment have been completed and the Owner has received State Agency approval (if required) to make final payment.

§ 9.10.2.2 The Contractor shall schedule a close out meeting with the Construction Manager for the purpose of delivering the close out documents required pursuant to the Contract Documents.

§ 9.10.2.3 If the Contractor's Work is not accepted by the Owner after final inspection and additional time is required to complete items identified during the final inspection, the date starting the warranty periods described in the Contract Documents shall be set by the Architect at his discretion.

§ 9.10.2.4 If the Architect and/or Construction Manager are required to perform more than one final inspection because the Contractor's Work fails to comply with the requirements of the Contract Documents, the amount of compensation paid to the Architect and the Construction Manager by the Owner for additional services shall be deducted from the final payment to the Contractor.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents;

.3 terms of special warranties required by the Contract Documents;

.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment; or

.5 faulty or defective work appearing after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. Prior to beginning any work, the Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors,

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Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.1.2 The Contractor shall make the participation of its Subcontractors in its safety plan and program mandatory. The Contractor and its Subcontractors shall conduct their operations in accordance with the Safety Guides for Construction issued by New York State Education Department ("SED") and the Contractor's Safety Plan and Program.

§ 10.1.3 The Contractor shall schedule safety meetings regularly and its Subcontractors must be represented at such meetings. On a weekly basis, the Contractor shall submit to the Construction Manager minutes of its safety meetings, which minutes shall include a list of the individuals present at such meetings.

§ 10.1.4 A list of key personnel, with addresses and telephone numbers for emergency purposes, shall be forwarded to the Owner, Construction Manager and Architect.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall provide for the safety and protection of the Project sites, all persons who come in contact with the Work and all real and personnel property located at or adjacent to the Project sites. Without limitation to the foregoing, the Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected by its work, including but not limited to students, volunteers, employees and agents of the Owner, the Construction Manager and the Architect;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor;

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

.4 construction or operations by the Owner, Separate Contractors, or other Contractors.

The Contractor agrees, in order that the Work will be completed with the greatest degree of safety to conform to the requirements of the Regulation 155.5 of the NYS Commissioner of Education, the Occupational Safety and Health Act of 1970 (OSHA) as amended, and the Construction Safety Act of 1969 as amended including all standards and regulations that have been since or shall be promulgated by the governmental authorities which administer such acts, and shall indemnify and hold harmless the Owner, the Construction Manager, the Architect, and all their employees, consultants and representatives from and against any and all claims, damages, losses, suits, obligations, fines, penalties, costs, charges and expenses which may be imposed upon or incurred by or asserted against any of them by reason of any act or omission of such Contractor or any Subcontractor or any person or firm directly or indirectly employed by such Contractor with respect to violations of OSHA or other safety requirements, rules and/or regulations.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss and shall comply with all applicable provisions of governing agencies (State, Federal and Municipal) as they affect the operations of the Work and insure that all machinery, openings, excavations and other physical hazards be guarded in accordance with OSHA requirements. In case of conflicts, the most stringent restrictions will apply.

§ 10.2.2.1 Any reference made to rules and regulations promulgated by various governmental agencies in the Contract Documents are for the Contractor's benefit. Compliance with said regulations by workers employed by the Contractor or by Subcontractors is the sole responsibility of the Contractor; and that, notwithstanding any reference to any rule or regulation, the Architect, the Construction Manager, the Owner or any of their respective representatives or employees are not assuming any duty to provide supervision of construction methods.

.1 Contractor shall assign one person from its staff to be on-site safety coordinator.

.2 Contractor is solely responsible for overall job site safety, the safety of its employees and the conduct of its Work and that of its Subcontractors.

.3 Contractor affirms it is fully versed in all State, Federal and local regulations pertaining to safety, including OSHA regulations pertaining to any and all construction operations.

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§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.3.1 Without limitation to the foregoing provisions of this Article 10, the following general safety and security standards shall be complied with:

.1 All construction materials shall be stored in a safe and secure manner.

.2 Fences around construction supplies and debris shall be maintained.

.3 Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.

.4 During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

§ 10.2.3.2 The Contractor shall be solely responsible for providing a safe place for the performance of the Work.

§ 10.2.3.3 Protection of construction materials and equipment stored at the Project sites from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor.

§ 10.2.3.4 The Contractor shall provide all temporary access walkways, both interior and exterior, temporary partitioning and the like necessary to complete its Work. The Contractor shall maintain in an unobstructed condition all entrances and/or exits from existing buildings. Only equipment with rubber tires will be allowed on any existing or new pavement unless the Contractor has obtained the prior approval of the Owner and the pavement has been protected with planking or by other means approved by the Owner.

§ 10.2.3.5 Construction areas which are under the control of a Contractor and therefore not occupied by the Owner's staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of any building in which construction is occurring. Periodic inspection and repair of the dust and contaminant barriers must be made to prevent exposure to dust or contaminants. Heavy duty plastic sheeting may be used only for a vapor, fine dust, or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

§ 10.2.3.5.1 Pursuant to Section 222-a of New York Labor Law, when a harmful dust is created, if the Contractor fails to install, maintain and effectively operate appliances and methods approved by the board of standards and appeals for the elimination of harmful dust, the Contract between Owner and Contractor shall be void.

§ 10.2.3.6 The Contractor shall provide necessary and required security measures to adequately safeguard the construction sites from vandalism and intrusion of unauthorized persons. The Contractor shall submit its means and methods of security to the Owner and the Construction Manager for approval. The Project sites must be secured 24 hours a day, 7 days a week, including holidays. The Contractor's failure to secure the site as required by this section may result in the Owner engaging security services. All costs and expenses associated with the Owner's security of the Project sites will be reimbursed by the Contractor and will be deducted from certified payments if not reimbursed. While the Owner may have security guards patrolling its properties, including but not limited to the Project sites, the function of such security guards is not for the purpose of guarding the Contractor's property, operations or work.

§ 10.2.3.7 The Contractor's operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when building or affected building spaces are not occupied. The Contractor shall take acoustical abatement measures as needed to minimize the noise produced by its operations and to ensure no disruption to occupied spaces.

§ 10.2.3.8 The Contractor shall ensure that its work, at all times, is performed in a manner that affords reasonable access to both vehicles and individuals, to the premises of the Owner and all adjacent areas. The Contractors' work shall be performed, to the fullest extent possible, in such a manner that areas in and around the construction area will be free from all debris, building materials and equipment likely to cause hazardous conditions, and do not close or obstruct walkways, roadways or other occupied facilities or facilities to be used by the Owner. Without limitation to

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any other provision of the Contract Documents, the Contractor shall use its best efforts to minimize any interference with the occupancy of areas, buildings, entrances, and parking areas in and around the premises at which work is being performed. Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations, and portable fire extinguishers shall be provided by the Contractor and made conveniently available throughout the construction site.

§ 10.2.3.9 The Owner and the Construction Manager shall designate locations at the site at which the Contractor, its Subcontractors and employees may utilize in connection with their work. The Contractor's employees and the employees of the Contractor's Subcontractors and others engaged by the Contractor to perform its work are prohibited from trespassing or leaving any vehicle on any property not assigned by the Owner as set aside for the use of the Contractor. The Contractor's employees and the employees of the Contractor's Subcontractors and others engaged by the Contractor to perform its work are restricted to the immediate area at which work is to be performed.

§ 10.2.3.10 The Contractor shall notify its employees and Subcontractors of the location of the nearest fire alarm box at all locations where the Work is in progress.

§ 10.2.3.11 The Contractor shall be responsible for all costs incurred by the Owner caused by false security alarms and false fire alarms set off by the Contractor, its Subcontractors, employees, suppliers, officers, directors or servants. Costs shall include but not be limited to cost of Owner's employees and contractors responding to such alarms.

§ 10.2.3.12 All safety equipment including hard hats and other protective gear required for the Contractor to perform its work are to be supplied by the Contractor and/or its Subcontractors. Within the designated construction areas, the Contractor's employees, superintendents, and/or other agents, and its Subcontractors, employees, superintendents, and/or other agents are required to wear hard hats and other required and/or essential safety equipment. Each person seen without a hard hat, or otherwise failing to comply with this requirement, will be ordered to leave the Project. No prior warnings will be given by the Owner, Construction Manager or Architect. The Contractor and its Subcontractors shall be solely responsible for making up and paying for any loss of production or required progress resulting from the removal of personnel from the Project as set forth in this Section 10.2.3.16 including any costs incurred by the Owner in connection with the Work of other contractors.

§ 10.2.3.13 The Contractor and its subcontractors shall provide blankets and auxiliary fire protection as part of its construction safety program to prevent damage to adjacent work or materials as a result of its welding or burning operations. Additionally, as part of its construction safety program, the Contractor and its Subcontractors shall provide a fire watch, with a fire extinguisher, which is acceptable to the Owner.

§ 10.2.3.14 The Owner reserves the right to have all operating equipment periodically inspected by an independent inspector whose findings will be binding. The Contractor, at its own expense, must make corrections within two (2) working days of receiving a written report.

§ 10.2.3.15 All flag people required for deliveries to the site are to be furnished by the Contractor or its Subcontractors.

§ 10.2.3.16 The Contractor shall take all necessary steps to prevent its employees from disturbing and/or damaging the Owner's facilities.

§ 10.2.3.17 The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any property adjacent to the Project and improvements therein from damage caused by the performance of the Contractor's Work. If, during the construction, public or private property or improvements are damaged or destroyed as a consequence of the performance of the Contractor's Work, the Contractor shall, at its own expense, restore such property or improvement to a condition equal to or better than that existing before such damage or injury was done, by repairing, rebuilding or replacing it, or otherwise making good such damage or destruction in an acceptable manner.

§ 10.2.3.18 The Contractor shall be solely responsible for any conditions that develop during construction and in the event any structure is dislocated, over strained, or damaged so as to affect its usefulness, the Contractor shall be

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solely responsible. The Contractor shall take whatever steps necessary to strengthen, relocate or rebuild the structure to meet requirements at the sole expense of the Contractor.

§ 10.2.3.19 Title to all completed or partially completed work at the job site, and to all materials delivered to and stored at said job site which are intended to become a part of the completed work covered by the Contract Documents, shall be in the name of the Owner. Notwithstanding the foregoing, and prior to acceptance of the completed work by the Owner, the Contractor shall be liable for all loss of or damage to said completed work, partially completed work, materials furnished by the Contractor, and/or materials or equipment furnished by others the custody of which has been given to the Contractor, arising from any cause other than those against which the Owner herein undertakes to carry insurance. In the event of loss or damage from cause other than those against which the Owner undertakes to carry insurance, the Contractor shall replace or repair the said work or materials at his own cost and expense, to the complete satisfaction of the Owner and the Architect.

§ 10.2.3.20 Any and all fines or citations levied against the Owner, Construction Manager or Architect due to the failure of the Contractor to comply with regulations of any governing authority, shall be paid for by the Contractor. This shall include any interest or late charges which accrue due to the Contractor's failure to remit payment upon receipt of such levies. For further indemnity obligations see Section 3.18 of these General Conditions.

§ 10.2.3.21 The Contractor acknowledges that the Labor Law of the State of New York, and regulations adopted thereunder, place upon both the Owner and Contractor certain duties and that liability for failure to comply therewith is imposed on both the Owner and Contractor regardless of their respective fault. The Contractor hereby agrees that, as between the Owner and the Contractor, and to the extent permitted by law, the Contractor is solely responsible for compliance with all such laws and regulations imposed for the protection of persons performing the Contract. For additional indemnity obligations see Section 3.18 of these General Conditions.

§ 10.2.3.22 The Owner, the Construction Manager and/or the Architect will not assume any responsibility for the safe operation of any cranes or equipment. The Contractor is obligated to perform all engineering, obtain permits, and to have all hoisting equipment inspected as required by OSHA, Village, Town, County, State, and Federal regulations as well as any other agency having jurisdiction. Copies of all inspection reports and certificates must be transmitted by the Contractor to the Owner and the Construction Manager as soon as possible.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual construction methods are necessary for execution of the Work, the Contractor shall give the Owner and the Construction Manager reasonable advance notice, maintain on the site a full set of safety instructions relating to all such materials, exercise utmost care and carry on such activities under supervision of properly qualified personnel. In the event the Owner determines that the Work for which the Contractor intends to use explosives or other hazardous material or equipment or unusual construction methods can be performed by the Contractor with alternative means, methods and/or techniques that avoid or reduce the use of explosives and/or hazardous material or equipment or unusual construction methods, the Contractor shall employ such alternate means of prosecuting its Work at no additional cost to the Owner.

§ 10.2.4.1 Transportation, storage, and use of explosives shall be in strict accordance with all local, state and federal regulations, statutes, and requirements. All safety precautions as set forth in the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc. shall be observed.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

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§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

§ 10.2.8.1 If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.8.2 The Contractor shall immediately contact the Construction Manager and, within 24 hours, report in writing to the Architect, the Construction Manager and the Owner all accidents arising out of or in connection with the Work which cause death, personal injury or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner, Construction Manager, and Architect

§ 10.2.8.3 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a hazardous material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect verbally and in writing of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the hazardous material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the hazardous material or substance or who are to perform the task of removal or safe containment of the material or substance. When the material or substance has been rendered harmless, Work in the affected area shall resume. By Change Order, the Contract Time may be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the

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Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.3.7 The Contractor shall notify in writing the Owner and the Construction Manager of any storage, use, or discovery of hazardous material on the Project site(s) which the Contractor knows of or becomes aware of or reasonably should know about.

§ 10.3.8 The Contractor shall take all reasonable precautions and measures to prevent any contamination by or spread or disturbance of hazardous or potentially hazardous substances or materials stored, used, or discovered on the Project site(s).

§ 10.3.9 For the avoidance of any doubt, COVID-19 shall not be considered a Hazardous Material for purposes of this Article 10.3.

§ 10.4 Emergencies

§ 10.4.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.4.2 The Contractor must promptly report in writing to the Construction Manager all emergencies whatsoever arising out of, or in connection with the performance of the Work, whether on or adjacent to the Project site, which caused death, personal injury or property damages, giving full details and statements of witnesses. In addition, if death, injury, or damages are caused, the emergency shall be reported immediately to the Construction Manager, Owner, and Architect.

§ 10.4.3 All fire and emergency access, including roads, rights-of-way, corridors, doors, and stairs, and all existing fire and smoke detection systems shall be maintained at all times in accordance with fire safety laws. If the Work requires the temporary obstruction of any fire or emergency access or existing fire and smoke detection systems, the Construction Manager shall be notified at least 72 hours in advance.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in this Section 11.1, the Agreement or elsewhere in the Contract Documents.

§ 11.1.1.1 Notwithstanding any terms, conditions or provisions, in any other writing between the Contractor and Owner, with the exception of Workers' Compensation and New York Disability Insurance, the Contractor agrees to effectuate the naming of the following as additional insureds, as described in these General Conditions and elsewhere in the Contract Documents, on all of the Contractor's insurance policies: (a) the Owner, together with the Owner's Board of Education, officers, elected and appointed officials, consultants, agents, servants, employees and volunteers, (b) the Architect, and the Architect's employees and consultants and (c) the Construction Manager, and the Construction Manager's employees and consultants. Just listing the above entities as "certificate holder" is NOT acceptable.

§ 11.1.1.2 In the event that any of the insurance coverage to be provided by the Contractor contains a deductible or self-insured retention, or the insurance of the Owner, Architect or the Construction Manager contains a deductible or self-insured retention, the Contractor agrees to indemnify and hold the Owner, the Architect and the Construction Manager harmless from the payment of such deductible and/or self-insured retention, for all claims arising from any acts or omissions of Contractor or Contractor's officers, directors, employees, Subcontractors, suppliers or any others engaged by Contractor directly or indirectly to perform Contractor's Work on the Project, which deductible and self-insured retention shall in all circumstances remain the sole obligation and expense of the Contractor.

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§ 11.1.2 The insurance required by this Section 11.1 shall be written for not less than limits of liability specified in this Section 11.1 and as otherwise required in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of the Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.2.1 The policies naming the Owner as an Additional Insured shall:

.1 Be an insurance policy from an A.M. Best A-rated or better insurer, licensed and admitted to conduct business in New York State. A New York licensed and admitted insurer is required.

.2 State that the Contractor's coverage shall be primary and non-contributory coverage for the Owner, its Board of Education, officers, elected and appointed officials, consultants (including but not limited to the Architect and the Construction Manager), agents, servants, employees and volunteers including a waiver of subrogation in favor of the Owner and its additional insureds for all coverages including Workers Compensation.

.3 Shall not contain any escape clauses or exclusions contrary to the Owner's interests.

.4 Shall not restrict or exclude coverage involving New York State Labor Law statutes or gravity related injuries.

.5 Additional insured status for General Liability coverage shall be provided by standard or other endorsements that extend coverage to the Owner and the other additional insureds for on-going operations (CG 20 38 or equivalent) and products and completed operations (CG 20 37 or equivalent). The decision to accept an endorsement rests solely with the Owner. A completed copy of the endorsements must be attached to the Certificate(s) of Insurance, including General Liability, Auto Liability and Umbrella/Excess coverages. A copy of the Acord 855 Form is required to be sent for review.

§ 11.1.2.2 At the Owner's request, the Contractor shall provide a copy of the declaration page of the liability and umbrella/excess policies with a list of endorsements and forms. If requested, the Contractor will provide a copy of the endorsements and forms.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner prior to commencement of the Work. These certificates must set forth evidence of all coverage required by this Section 11.1. The Contractor shall furnish to the Owner, through the Construction Manager, copies of any endorsements that are subsequently issued amending limits of coverage. If any of the insurance coverages required in the Contract Documents are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage shall be furnished by the Contractor to the Owner within five business days of becoming aware of a proposed reduction or actual reduction.

.1 The certificate of insurance must describe all services provided by the Contractor (e.g., roofing, carpentry or plumbing) that are covered by the liability policies.

.2 A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/12) must be included with the certificates of insurance. For any "yes" answers on Items G through L on this Form - additional details must be provided in writing. Policy exclusions may not be accepted.

.3 Proof of coverage of Workers Compensation (C-105.2 or U-26.3) and NYS Disability insurance (DB-120.1) must be on one of the approved forms, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable as proof of Workers Compensation and NYS Disability insurance. A Contractor seeking an exemption from having Workers' Compensation

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insurance must file a CE-200 Form with New York State. The form can be completed and submitted directly to the Workers' Compensation Board online.

§ 11.1.4 The minimum types and amounts of insurance coverage are the following:

.1 Commercial General Liability (CGL) Insurance

Limits of Insurance must be the greater of those carried by the Contractor and the following:
$1,000,000 per Occurrence/$2,000,000 Aggregate
$1,000,000 Personal and Advertising Injury
$2,000,000 Products and Completed Operations
$ 100,000 Fire Damage
$ 10,000 Medical Expenses

a. The general aggregate shall apply on a per-project basis.

b. Attached to each certificate of insurance shall be a copy of the additional Insured Endorsement

c. Products and Completed Operations coverage must remain in effect for **three years** after Project completion and acceptance of the Work performed.

.2 Automotive Liability

Limits of Insurance must be the greater of those carried by the Contractor and the following:
$1,000,000 combined single limit for owned, leased, hired, borrowed and non-owned motor vehicles.

.3 Umbrella/Excess Liability

Limits of Insurance must be the greater of those carried by the Contractor and the following:

a. $5,000,000 each occurrence and aggregate when there is no work at elevation (more than 1 story or 10 feet) and the contract value is less than or equal to $1,000,000.

b. $10,000,000 each occurrence and aggregate when work will be at elevation (>1 story or 10 feet) or when the contract value is greater than $1,000,000.

c. Owner and other parties referenced in Section 11.1.1.1 must be included as additional insureds on the Umbrella/Excess Liability Policy

d. Umbrella/Excess coverage shall be on a follow-form basis or provide broader coverage over the General Liability and Auto Liability coverages.

f. Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement

.4 Workers Compensation and Employers Liability

a. Statutory Workers' Compensation (C-105.2 or U-26.3); and NYS Disability Insurance (DB-120.1) for all employees per New York State Workers Compensation and Disability laws. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable proof.

b. Employers Liability Insurance with the limits of insurance being the greater of those carried by the Contractor and the following limits of at least $500,000, each accident, $500,000 for bodily injury by accident and $500,000 each employee for injury by disease.

.5 Owners Contractors Protective (OCP) Insurance

a. For contracts less than or equal to $1,000,000 and/or work on 1 story (10 feet) only: $1,000,000 per occurrence, $2,000,000 aggregate with the Owner as the Named Insured. There will be no additional insureds on any OCP policies.

b. For Contracts greater than $1,000,000 and/or work over 1 story (>10 feet): $2,000,000 per occurrence, $4,000,000 aggregate with the Owner as the Named Insured. There will be no additional insureds on any OCP policies.

c. The OCP Policy must be with a NYS licensed and admitted carrier.

.6 Cyber Insurance

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Contractor must carry coverage applicable to first- and third-party claims, arising from a cyber incident that could impact the Owner's data the Contractor may have in their possession. Limits must be the greater of those carried by the Contractor and $250,000 per incident and in the aggregate. If the coverage is on a claims-made basis, coverage must have a retroactive date no later than the date of the Contractor's agreement with the Owner and provide coverage for two years following the date of final Completion of the Project. The Cyber policy must be a NYS licensed carrier.

.7 **Asbestos/Lead Abatement/Pollution Liability Insurance**:

a. Limits of Insurance must be the greater of those carried by the Contractor and $2,000,000 per occurrence/$2,000,000 aggregate, including products and completed operations. Such insurance shall include coverage for the Contractor's operations including, but not limited to, removal, replacement, enclosure, encapsulation and/or disposal of asbestos or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. If a retroactive date is used, it shall pre-date the inception of the Agreement between the Owner and the Contractor.

b. If the Contractor is using motor vehicles for transporting hazardous materials, the Contractor shall maintain pollution liability broadened coverage (ISO Endorsement CA 9948 or CA 01 12), as well as proof of MCS 90. Coverage shall fulfill all requirements of this Section and shall extend for a period of three (3) years following Project completion and acceptance of the Work performed.

.8 **Testing Company Errors and Omission Insurance**

Limits of Insurance must be the greater of those carried by the Contractor and the following: $1,000,000 per occurrence/$2,000,000 aggregate for the testing and other professional acts of the Contractor performed under the Contract with the Owner.

The amount of insurance contained in the aforementioned insurance coverages shall not be construed to be a limitation of the liability on the part of the Contractor or any of its subcontractors.

§ 11.1.5 MISCELLANEOUS INSURANCE PROVISIONS

§ 11.1.5.1 The Contractor acknowledges and agrees that failure to obtain and keep effective the insurance required in this Section 11.1 and elsewhere in the Contract Documents constitutes a material breach of contract and subjects the Contractor to liability for damages incurred by the Owner as a result of the breach. In addition, the Contractor will be responsible for the indemnification of the Owner and all required additional insureds stated in Section 11.1.1.1 above for any and all costs associated with such lapse in coverage, including but not limited to reasonable attorney's fees, and all other legal remedies available to the Owner. The Contractor is to provide the Owner with a certificate(s) of insurance, evidencing the above requirements have been met, prior to the commencement of work. The failure of the Owner to object to the contents of the certificate(s) of insurance or the absence of same shall not be deemed a waiver of any rights held by the Owner.

§ 11.1.5.2 Subcontractors are subject to the same insurance requirements as Contractors and the Contractor must submit insurance certificates from the Contractor's Subcontractor's to the Owner, through the Construction Manager, for approval prior to the start of any work by any Subcontractor.

§ 11.1.5.2.1 In the event the Contractor fails to obtain the required certificates of insurance from a Subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend, and hold harmless the Owner and all other additional insureds identified in Section 11.1.1.1 of these General Conditions from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents (including these General Conditions).

§ 11.1.5.3 In addition to the Requirements in 11.1.4, Contractor will also satisfy any insurance required by any governmental authority.

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§ 11.1.5.4 Three (3) originals of the Contractor's certificate(s) of insurance shall be submitted to the Construction Manager and reviewed by the Owner prior to start of construction. If the Owner is damaged or subject to loss due to failure of the Contractor to obtain and maintain such insurance, then the Contractor shall bear all cost and responsibilities attributable thereto.

§ 11.1.5.5 The Contractor assumes responsibility for all injury or destruction of the Contractor's materials, tools, machinery, equipment, appliances, shoring, scaffolding, false and form work, and personal property of Contractor's employees from whatever cause arises. Any policy of insurance secured covering the Contractor or Subcontractors against physical loss or damage to such property whether leased, hired or owned shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

§ 11.1.5.6 The Owner in good faith may adjust and settle a loss with the Contractor's insurance carrier.

§ 11.1.6 Performance Bond and Payment Bond

§ 11.1.6.1 The Contractor shall provide surety bonds, from a company or companies lawfully licensed/authorized and admitted to conduct business and issue surety bonds in New York State. The Contractor shall furnish a Performance Bond and Labor and Material Payment Bond meeting all statutory requirements of the jurisdiction where the Project is located, in form and substance satisfactory to the Owner and, without limitation, complying with the following specific requirements:

.1 All Surety companies are subject to the approval of the Owner and may be rejected by the Owner without cause. Except as otherwise required by statute, the form and substance of such bonds shall be satisfactory to the Owner in the Owner's sole judgment. The Performance Bond and the Labor and Material Payment Bond shall be provided using the most recent edition of AIA Document A312 (2010 or later).

.2 Bonds shall be issued and executed by a surety licensed/authorized and admitted to conduct business and issue surety bonds in New York State, with a AM Best's rating of no less than A-, and the bonds shall remain in effect for a period not less than two (2) years following the date of Substantial Completion or the time required to resolve any items of incomplete Work and the payment of any disputed amounts, whichever time period is longer.

.3 The Performance Bond and the Labor and Material Payment Bond shall each be in an amount equal to the Contract Sum and shall be adjusted during the Project to reflect increases in the Contract Sum.

.4 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power-of-attorney providing such authority and stating the monetary limit if any of such authority.

.5 Acknowledgments for the individuals executing the Performance Bond and the Labor and Material Payment Bond on behalf of the Contractor and Surety shall be attached to such bonds.

.6 Every Performance Bond and the Labor and Material Payment Bond provided pursuant to this Section 11.1.6 must display the Surety's Bond Number and be modified to include the following text in the modifications section of each such Bond or to include the following text through a Rider that is attached to each such Bond and referenced in the modification section of each such Bond:

(i) The Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Any addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder, and notice to the Surety of such matters is hereby waived.

(ii) The Surety agrees that it is obligated under the bonds to any successor, grantee, or assignee of the Owner.

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(iii) Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract or the Bond, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner, and the Owner shall have fourteen (14) days from receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within fourteen (14) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first class postage prepaid, to the Owner.

§ 11.1.6.2 The Contractor shall deliver the required bonds to the Construction Manager prior to beginning any construction activity. No work is to be performed by the Contractor until such bonds have been reviewed and approved by the Owner.

§ 11.1.6.3 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) request for reduction or release of retention; (2) request for final payment; and (3) any other material required by the surety.

§ 11.1.6.4 The Owner, Construction Manager or Architect may, in their sole discretion and without prior notice to the Contractor, inform the Contractor's surety of the progress of the Contractor's work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Contractor's Work.

§ 11.1.6.5 Upon the request of any person or entity appearing to be a potential beneficiary of the bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.6.6 If the surety on any Bond by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in New York State or it ceases to meet the requirements of paragraph 11.1.6.1, within ten days thereafter, the Contractor will substitute another Bond and surety, both of which must be acceptable to Owner.

§ 11.1.8 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability that the Owner usually maintains in the course of its operations as a public school district. In addition, the Owner will purchase and maintain a Builder's Risk policy to include jointly the interest of the Owner, Contractor, Subcontractors and Sub-Subcontractors. The limit of the Builder's Risk policy will reflect the total completed value (all material and labor costs) and provide coverage for fire, lightning, explosion, extended coverage, vandalism, malicious mischief, windstorm, hail, and/or flood. The Builder's Risk policy will remain in effect until the Owner is the only entity that has an insurable interest in the property. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in New York State.

§ 11.2.2 Intentionally omitted.

§ 11.2.3 Intentionally omitted.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-

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subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Contract Documents or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

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§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense. Prior to the date of Substantial Completion, if the Contractor or its Subcontractor(s) or their respective officers, directors, employees, contractors, suppliers, servants, agents or any person or firm directly or indirectly engaged by such Contractor or Subcontractor in the performance of the Contract uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical device(s), the Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within two years after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly (no more than 30 days) after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the two-year period for correction of Work, if the Owner fails to notify the Contractor and to give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within thirty (30) days after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it at Contractor's expense in accordance with Section 2.5 and recover the costs incurred to do so from the Contractor or offset the costs incurred against any sums the Owner owes the Contractor or the Owner may notify the bonding company to have such work and/or obligations performed at no additional cost to the Owner.

§ 12.2.2.2 For any portion of the Work for which the warranty is to be effective upon Substantial Completion, the two-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The two-year period for correction of Work shall begin anew from the date of Owner's acceptance of the corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.2.4 Where the Contractor's default and/or neglect to carry out its Work in accordance with the Contract Documents threatens the health, safety and/or welfare of the occupants of the Owner's facilities and/or threatens the structural integrity and/or preservation of the Owner's facilities, the Owner may proceed to carry out or correct the Contractor's Work without prior notice of its intention to do so.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's Work that is not in accordance with the requirements of the Contract Documents and/or by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the two-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

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§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules.

§ 13.1.1 The Contractor shall at all times observe and comply with all Federal, State and Local Laws, rules and regulations and all Regulations of the Owner, in any manner affecting the Work and all such orders as exist at present and those which may be enacted in the future, by bodies or tribunals having jurisdiction or authority over the Work and the Contractor shall indemnify and save harmless the Owner and its Board of Education, employees, officers, agents, or servants against any claim or liability arising from, or based on, a violation of any such law, ordinances, regulation, order or decree by the Contractor or the Contractor's officers, directors, employees, Subcontractors, suppliers, agents or anyone else working directly or indirectly for the Contractor on the Project.

§ 13.1.1.1 Historical lack of enforcement of any law, rule or regulation local or otherwise, shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner and the governmental entity responsible for enforcement of the law, rule or regulation.

§ 13.1.2 The Contractor specifically agrees, as required by New York Labor Law, Sections 220 and 220-d, as amended, that:

.1 No laborer, workman or mechanic in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or any part of the Work contemplated by the Contract, shall be permitted or required to work more than eight hours in any one calendar day or more than five days in any one week, except in the emergencies set forth in the Labor Law.

.2 The wages paid for a legal day's work shall not be less than the prevailing rate of wages as defined by law.

.3 The minimum hourly rate of wages to be paid shall not be less than that stated in the Specifications, and any redetermination of the prevailing rate of wages after the Contract is awarded shall be deemed to be incorporated therein by reference as of the effective date of redetermination and shall form a part of the Contract. The Labor Law provides that the Contract may be forfeited and no sum paid for any work done thereunder on a second conviction for willfully paying less than:

(a) The stipulated wage scale as provided in Labor Law, Section 220, Subdivision 3, as amended; or

(b) The stipulated minimum hourly wage scale as provided in Labor Law, Section 220-d, as amended.

§ 13.1.3 The Contractor specifically agrees, as required by the provisions of New York Labor Law Section 220-e, as amended, with respect to operations performed within the territorial limits of New York State, that:

.1 In hiring of employees for the performance of work under this Contract or any subcontract hereunder, or for the manufacture, sale or distribution of materials, equipment or supplies hereunder, no Contractor, Subcontractor nor any person acting on behalf of such Contractor or Subcontractor, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates.

.2 No Contractor, Subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, creed, color, disability, sex or national origin.

.3 There may be deducted from the amount payable to the Contractor by the Owner under this Contract a penalty of fifty ($50.00) dollars for each person for each calendar day during which such person was discriminated against or intimidated in violation of this Section 13.1.3.

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.4 The Contract may be cancelled or terminated and all monies due under the Contract forfeited for a second or any subsequent violation of the terms and conditions set forth in this Section 13.1.3.

§ 13.1.4 The Contractor and each of its Subcontractors shall comply with Prevailing Wage Rates as issued by the State of New York Department of Labor for the location and duration of this Project and shall comply with all requirements governing its payments to its employees as set forth in Labor Law, Section 220 et seq of the New York State Labor Law. Although the Contractor and its Subcontractors are not required to submit their certified payrolls electronically to the New York Department of Labor ("NYDOL"), hard copies of the certified payrolls must still be submitted with the Contractor's payment applications together with proof of submission to the NYDOL.

§ 13.1.5 The Contractor must be registered with the NYDOL pursuant to NYS Labor Law § 220-i ***before*** the submission of a bid for the Contract (or if the Work was not bid before award of the Contract). The Contractor represents and warrants that it is registered with NYDOL. The Contractor represents and warrants that it will ensure and provide proof thereof to the Owner that each and every Subcontractor engaged by Contractor for work on the Project shall be registered with the NYDOL pursuant to NY Labor Law § 220-i prior to commencing any work on the Project.

§ 13.1.6 The Contractor shall comply with all of the provisions of the Immigration Reform and Control Act of 1986 and regulations promulgated pursuant thereto and shall require its Subcontractors to comply with same. In addition to and not limiting any other indemnification provisions in the Contract Documents (including but not limited to Section 3.18 of these General Conditions), to the fullest extent permitted by law, the Contractor shall and does hereby agree to fully indemnify, protect, defend, and hold harmless the Owner, Owner's Board of Education, agents and employees from and against any penalties, fees, costs, liabilities, suits, claims, or expenses of any kind or nature, including reasonable attorney's fees, arising out of or resulting from any violation or alleged violation of the provisions of said laws by Contractor or its Subcontractor(s) in connection with the Work of the Contract Documents.

§ 13.1.7 The Owner shall be entitled to request of Contractor or its successor in interest adequate assurance of future performance in accordance with the terms and conditions of its Contract in the event (1) an order for relief is entered on behalf of the Contractor pursuant to Title 11 of the United States Code, (2) any other similar order is entered under any other debtor relief laws, (3) the Contractor makes a general assignment for the benefit of its creditors, (4) a receiver is appointed for the benefit of its creditors, or (5) a receiver is appointed on account of its insolvency. Failure to comply with such request within ten (10) days of delivery of the request shall entitle the Owner to terminate the Contract in accordance with Article 14 hereof. In all events, pending receipt of adequate assurance of performance and actual performance in accordance therewith, the Owner shall be entitled to proceed with the Contractor's work with its own forces or with other contractors on a time and material or other appropriate basis, the cost of which will be back charged against the Contractor.

§ 13.1.8 The Contractor shall maintain policies of employment as follows:

.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of age, creed, race, religion, color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their age, race, creed, religion, color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to age, creed, race, religion, color, sex, national origin, sexual orientation, gender identify or expression, military status, disability, predisposing genetic characteristics, familial status, marital status or status as a victim of domestic violence.

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§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without the prior written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract. The Contractor shall not assign any monies due or to become due to him under the Contract without the previous written consent of the Owner and the Contractor's surety.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such an assignment.

§ 13.2.3 No assignment, transfer, conveyance or other disposition of all or any part of the Contract, or of any of the moneys due or to become due thereunder, or of any right, title or interest therein, or of the right to execute the Contract will be permitted or allowed without the prior consent, in writing, of the Owner and of the surety or sureties on the Contractor's bonds. The foregoing shall not be construed to prohibit subcontracting in the manner set forth in these General Conditions, or assignments or transfers to such surety or sureties.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law or in equity, and such rights and remedies shall survive acceptance of the Work and/or termination of the Contract.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.3.3 The rights stated in these General Conditions and the Contract Documents are cumulative and not in limitation of any rights of the Owner at law or in equity.

§ 13.3.4 The Owner shall not be responsible for damages or for loss of anticipated profits on Work not performed on account of any termination of the Contractor by the Owner or by virtue of the Owner's exercise of its right to take over the Contractor's Work.

§ 13.3.5 The Contractor hereby expressly waives any rights it may have in law or in equity to lost bonding capacity as a result of any of the actions of the Owner, the Architect or the Construction Manager taken in connection with the Contractor's Work on the Project.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities and entities supplying utilities to the Project site(s). Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority or utility, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids or proposals are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and

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inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall correct such Work and all costs made necessary by such failure, including those of correcting the Work, repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense, including the cost of retesting for verification of compliance if necessary until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and none of such costs shall be included in computing the Contract Sum.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.4.7 The Contractor agrees that the cost of testing services required for the convenience of the Contractor in his scheduling and performance of the Work, and the cost of testing services relating to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor.

§ 13.4.8 Any material to be furnished shall be subject to inspections and tests in the shop and field by the Architect and the Construction Manager. Shop inspection shall not relieve the Contractor of the responsibility to furnish satisfactory materials and the right is reserved to reject any material at any time before final acceptance of the Work, when in the opinion of the Architect the materials and-/or workmanship do not conform to the requirements of the Contract Documents. Upon request of the Architect or Construction Manager, the Contractor shall deliver test samples of any of the materials used in the Work to an independent testing agency. The Owner shall pay for the test of samples, which are found to conform to the Contract Documents. The Contractor shall pay for the tests of samples, which do not conform to the Contract Documents. This shall not relieve the Contractor of his obligations to perform specific tests described elsewhere in the Contract Documents.

§ 13.4.9 Where the Contract Documents require part of the Work to be specially tested and approved, it shall not be covered up before testing without timely notice thereof or consent thereto. Should any part of the Work be covered up without notice, approval or consent, such part of the Work shall be uncovered for examination at the Contractor's expense if the Owner, Architect, Construction Manager or governmental authority with jurisdiction over the Contractor, the Work or the Project shall so require.

§ 13.4.10 When notice of tests and inspections is to be given to the Architect, it shall also be given to the Construction Manager.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate required in General Municipal Law Section 106-b..

§ 13.6 Time Limits on Claims

The Owner and the Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

§ 13.7 No Oral Waiver or Constructive Changes

The provisions of the Contract Documents shall not be changed, amended, waived, or otherwise modified in any respect except by a writing signed by the Owner. No person is authorized on behalf of the Owner to orally change,

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amend, waive, or otherwise modify the terms of the Contract Documents or any of the Contractor's duties or obligations under or arising out of the Contract Documents. Any change, waiver, approval, or consent granted to the Contractor shall be limited to the specific matters stated in the writing signed by the Owner and shall not relieve the Contractor of any other of the duties and obligations under the Contract Documents. No "constructive" changes shall be allowed.

§ 13.8 Sexual Harassment Prohibited

Federal and state laws and the policies of the Owner prohibit sexual harassment of employees, students, and volunteers. Sexual harassment includes any unwelcome sexual advances, requests for sexual favors or other verbal or physical conduct of a sexual nature that create a hostile or offensive working or learning environment for students, employees, and volunteers of the Owner and employees, agents, consultants, suppliers, subcontractors and others engaged directly or indirectly by Contractor to perform work on the Projects. The Contractor shall exercise control over its employees, agents, consultants, subcontractors, and suppliers so as to prohibit acts of sexual harassment of students, employees and volunteers of the Owner. In the event the Owner, in its reasonable judgment, determines that the Contractor or its employees, agents, consultants, subcontractors and/or suppliers have committed an act of sexual harassment, upon notice from the Owner, the Contractor shall cause such person to be removed and shall take such other action as may be reasonably necessary to cause such sexual harassment to cease. In the event the Contractor or its employees, agents, Subcontractors or suppliers believes it has been the subject of sexual harassment by the Owner, its elected and appointed officials, students, volunteers, vendors, employees or agents, it shall give notice to the Owner; so, the Owner can take such action as may be reasonably necessary to cause any sexual harassment to cease.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- **.3** Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed, and costs resulting directly from such termination. The Owner shall not be liable for loss of anticipated profits not performed on account of any termination described in Section 14.1.1 hereof. The Owner shall not be responsible for damages for loss of anticipated profits on Work not performed on account of any termination described in this Section 14.1.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

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§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract for cause if the Contractor

.1 refuses or fails to supply enough properly skilled workers or proper materials or equipment to complete timely the Work in accordance with the Contract Documents;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;

.4 refuses to correct deficient work performed by it;

.5 disregards the instructions of the Architect, the Construction Manager or the Owner (when such instructions are based on the requirements of the Contract Documents);

.6 breaches any warranty made by the Contractor under or pursuant to the Contract Documents;

.7 fails to furnish the Owner with assurances satisfactory to the Owner of the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents;

.8 fails after commencement of the Work to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents;

.9 fails or neglects to complete the Work within the Contract Time or in accordance with the Construction Schedule or fails or neglects to prosecute the Work in such a manner to reasonably assure completion within the contract time;

.10 refuses to proceed with the Work or extra work when and as directed by the Owner, Construction Manager or Architect;

.11 is or has been unnecessarily or unreasonably or willfully delaying the award of necessary subcontracts, or the placing of necessary material and equipment orders;

.12 fails to keep the Project free from strikes, work stoppages, slowdowns, lockouts or other disruptive activity; or

.13 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, three days' notice, the Owner may terminate in whole or in part employment of the Contractor and, if terminated in whole, the Owner may take any one or more of the following actions, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Take possession of materials stored off site by the Contractor that have been paid for by the Owner;

.3 Accept assignment of subcontracts pursuant to Section 5.4; and

.4 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.2.4.1 The costs of finishing the Work include, without limitations, all reasonable attorney's fees, additional Architect/Engineering fees, insurance, additional interest because of any delay in completing the Work, and all other direct, indirect and consequential damages incurred by the Owner by reason of the termination of the Contractor.

§ 14.2.5 The Owner shall not be responsible for damages or loss of anticipated profits on Work not performed on account of any termination described in Article 14.

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§ 14.2.6 For the remaining portions of the Contractor's Work that are not terminated pursuant to this Section 14.2, the terms and conditions of the Contract with the Owner shall remain in full force and effect. The Contractor shall continue to prosecute that portion of its Work that was not terminated.

§ 14.2.7 In the event that the Contractor, or the Contractor's surety, challenges the Owner's termination of the Contract for cause, and the Owner prevails in litigation in connection with such challenge, whether initiated by the Owner or by the Contractor or the Contractor's surety, the Owner shall be entitled to its costs, including reasonable attorney's fees, incurred as a result of such litigation, as part of any judgment against the Contractor or the Contractor's surety. Such costs, including reasonable attorney's fees, shall be deemed a cost of finishing the Work.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 At any time, the Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine by giving three (3) days prior written notice to Contractor describing in general the portion of the Contractor's Work that is suspended, delayed or interrupted and the effective date of such delay, suspension or interruption.

§ 14.3.2 When all or a portion of the Contractor's Work is suspended for any reason, delayed or interrupted, the Contractor shall securely fasten down all coverings and protect and secure the portion of its Work so suspended, delayed or interrupted, as necessary, from injury by any cause. The Contractor shall continue to prosecute that portion of its Work that has not been suspended, delayed, or interrupted.

§ 14.3.3 The Owner shall incur no liability to Contractor by reason of such suspension, delay, or interruption except that Contractor may request an extension of its time to complete its Work in accordance with the Contract Documents.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract, in whole or in part, for the Owner's convenience and without cause by giving seven (7) days' notice to Contractor, specifying the part of the Work or subcontract to be terminated and the effective date of termination. This right may be exercised by the Owner in its complete and absolute discretion. Contractor shall continue to prosecute the part of the Work not terminated. If the Work or any subcontract is so terminated, Owner shall incur no liability to Contractor by reason of such termination except as set forth in Section 14.4.3 of these General Conditions. For the remainder of the Work that is not terminated, the Contract Documents shall remain in full force and effect. Contractor shall be entitled to no payment for the terminated portion of the Work and, by signing the Agreement with the Owner, Contractor waives and forfeits any claim for damages and/or lost profits.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties:

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work;
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders to the extent they relate to the Work terminated and enter into no further subcontracts and purchase orders for the Work terminated; and
- **.4** proceed to complete the Work that was not terminated.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall recover as its sole remedy payment for Work properly executed in connection with the terminated portion of the Work prior to the effective date of the termination (including items properly and timely fabricated off the Project site, delivered and stored in accordance with the Owner's instructions) as well as any costs incurred by the Contractor to implement Owner directed work to protect and preserve the work completed by the Contractor prior to the notice of termination less the credits due the Owner and less the sums required by law to be held by the Owner due to any liens on public improvement filed against the Contract Sum that have not been discharged (which sums withheld due to such liens will be paid when such liens are discharged or released). The Contractor shall not be entitled to payment of any other sums. The Contractor shall not be entitled to any payment for the terminated portion of the Work and, by signing the Agreement with the Owner, Contractor waives and forfeits any claim for damages, overhead and/or lost profits for the terminated portion of the Work. A Construction Change Directive or a Change Order will be issued to make any

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required adjustment to the Date of Substantial Completion and/or the Contract Sum remaining to be paid to the Contractor.

§ 14.4.4 For the remaining portions of the Contractor's Work that are not terminated pursuant to this Section 14.4, the terms and conditions of the Contract with the Owner shall remain in full force and effect.

§ 14.5 The Contractor shall include in each of its subcontracts a clause, similar in effect to the provisions in this Article 14, including but not limited to a provision allowing the Contractor to terminate the subcontract for its sole convenience, subject only to the payment obligations set forth in Paragraph 14.4.3 of these General Conditions.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a written demand or assertion by the Contractor seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the Contractor. A Request for Information (or a response thereto), a Construction Change Directive, a Change Order, a reservation of rights, any meeting minutes, a daily report, any log entry, an Owner's request for or the Contractor's response to a Change Order proposal or a notice of a potential or future claim shall NOT in and of themselves constitute a Claim. A Claim requires a separate written demand or assertion with respect to any one or more of those items to be submitted in accordance with this Article 15.

§ 15.1.2 Time Limits on Claims

§ 15.1.2.1 The Contractor shall commence all Claims and causes of action against the Owner arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law. The Contractor waives all Claims and causes of action not noticed in accordance with 15.1.3 and not commenced in accordance with this Section 15.1.2.

§ 15.1.2.2 The Owner shall commence all causes of action against the Contractor arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law. The Owner waives all causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the Owner and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by the Contractor under this Section 15.1.3.1 shall be initiated within 14 days after occurrence of the event giving rise to such Claim or within 14 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the Owner. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.3.3 Written notice shall contain a heading stating "Notice of Claim" to clearly identify it as such. Such notice shall set forth in detail the circumstances that form the basis for the Claim and shall include the following: (1) a clear statement of the claim, including background and chronology; (2) documentation in support of the claim; (3) documentation in support of claimed damages; and (4) certification by responsible officer of the Contractor. The responsibility to substantiate Claims shall rest with the Contractor. An additional Claim arising from the same occurrence or condition made after the Initial Claim has been resolved through a Change Order shall not be considered.

§ 15.1.3.4 Should any Contractor wish to reserve its rights regarding filing of claims as set forth above, written notice of any event that may give rise to a claim must be given within fourteen (14) days of said event, whether or not any impact in time or money has been determined.

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§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will prepare Change Orders and/or Construction Change Directives and will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.4.3 Claims For Concealed or Unknown Conditions

If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the Contractor shall be given to the Owner, the Construction Manager and the Architect promptly before conditions are disturbed and in no event later than five (5) days after first observance of the conditions; and (3) in the case of a condition at the site which involves a hazardous or toxic substance, as those terms are defined by OSHA or AHERA, notice to the Owner, the Construction Manager and the Architect shall be given immediately upon discovery of such hazardous or toxic substance. The Construction Manager and the Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Contractor and the Owner in writing, stating the reasons.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5.1 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension of the Work, (7) a Construction Change Directive or (8) other reasonable grounds, a Claim shall be filed in accordance with this Section or such claim for additional costs shall be waived.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall articulate the reason additional time is requested, articulate the amount of additional time requested and include an estimate of cost and of probable effect of delay on progress of the Work. The Contractor shall accompany the Claim with a written analysis with a proposed revision to the Schedule illustrating the claimed influence of the basis for delay on the critical path of the Work and the applicable deadlines that may be impacted. Refer to Article 8 for other requirements for claims or applications for an extension of the time to complete the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction. For the purpose of establishing that abnormal adverse weather conditions have caused a delay, and determining the extent of delay attributed to such weather conditions, the Contractor shall furnish with its claim, National Oceanic and Atmospheric Administration (NOAA) National Weather Service records of climatic conditions during the same time interval for the previous five (5) years for the locality of the Work; the Contractor's daily job site logs/daily construction reports showing weather, job activities, and the effect of weather on the progress of the Work; and an impact schedule showing the effects of the weather event on the critical path of the Contractor's Construction Schedule. Time extension for

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weather delays and related impact do not entitle the Contractor to extended overhead recovery or to any other monetary compensation associated with that claim.

§ 15.1.6.3 The Contractor shall not be entitled to a separate increase in the Contract time for each one of a number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 15.1.7 Waiver of Claims.

§ 15.1.7.1 The timelines provided herein for the making of claims shall be a condition precedent to any payment for such claims or the granting of any extension of time. Failure of the Contractor to comply with the time and notice provisions of this Article shall be an absolute bar to making any payment to or extending the time of the Contractor for such claim. All claims of any type seeking any monies, or an extension of time shall be accompanied by full documentation. A claim submittal without full documentation shall be rejected by the Architect and, if not timely resubmitted within the original claim period, as set forth above, shall be waived.

§ 15.1.7.2 The Owner shall not be responsible for damages or for loss of anticipated profits on Work not performed on account of any termination of the Contractor by the Owner or by virtue of the Owner's exercise of its right to take over the Contractor's Work pursuant to the Contract Documents.

§ 15.1.7.3 The Contractor hereby expressly waives any rights it may have in law or in equity to lost bonding capacity as a result of any of the actions of the Owner or the Architect taken in connection with the Contractor's Work on the Project.

§ 15.2 Initial Decision

§ 15.2.1 Claims by the Contractor shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. An initial decision shall be required as a condition precedent to binding dispute resolution of the Contractor's Claim(s). If an initial decision has not been rendered within 60 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may pursue binding dispute resolution without a decision having been rendered by the Initial Decision Maker. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten business days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or (6) if the Initial Decision Maker reasonably concludes that it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten business days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation (if both parties agree to participate) or binding dispute resolution.

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§ 15.2.6 Either party may, within 30 days from the date of receipt of an initial decision file for mediation (if the other party agreed to mediation) or proceed to binding dispute resolution.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien or notice of lien on public improvement, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived in the Contract Documents (including the General conditions), shall be subject to mediation upon mutual agreement of the parties.

§ 15.3.2 If the parties agree to mediate their dispute, a request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 15.3.3 If the parties agree to mediate their dispute, either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been requested without resolution of the dispute, file for binding dispute resolution.

§ 15.3.4 If the parties agree to mediate their dispute, the parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Binding Dispute Resolution

The parties expressly agree to delete the requirement that any and all controversies and claims arising out of the Contract be referred to arbitration. By so agreeing, the parties express their mutual intent that there is no agreement to arbitrate such disputes, notwithstanding the use and reference to arbitration elsewhere in the Contract Documents. Binding dispute resolution shall be by action or proceeding brought in a court of competent jurisdiction in the County of Westchester in the State of New York.

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NEW YORK STATE WAGE RATE SCHEDULES

1.1 GENERAL

A. The following minimum prevailing rate of wages, health and welfare and pension fund contributions are as determined by the Industrial Commissioner of the State of New York in accordance with the provisions of Section 220 of the Labor Law of New York State.

B. It shall be the sole responsibility of each Contractor to pay wages at least equal to current and future Wage Rate Schedules which are applicable to this project throughout the entire duration of the Contract without claiming extra costs.

C. Current Wage Rate Schedules are included herein. The Owner and the Architect do not warrant the accuracy or pertinency of the wage rates stated. The Contractor shall be solely responsible for verifying the accuracy of the current and future Prevailing Wage Schedule.

D. Prevailing Rate Case Number PRC# 2026017495 has been assigned to the project. To access the PDF file of your schedule, click on the following link or copy and paste into your browser, type in the PRC number, and click in the Wage Schedule button.

https://apps.labor.ny.gov/wpp/doFindProject.do

An official website of New York State.
Here's how you know

Prevailing Wage

· Wage Schedule · Submit Notice Of Award · Submit Notice Of Project Completion

PRC#: 2026017495
Acceptance Status: Accepted Article 8
Type of Contracting Agency: Local School District

Contracting Agency

Pelham UFSD
James Hricay
Asst. Supt Business
629 Fifth Ave.
Pelham NY 10803

(914) 738-9140 Ext: 1140
jhricay@pelhamschools.org

Send Reply To

Teresa Jarrard
Architect
285 Main Street
Mount Kisco NY 10549

(914) 666 -5900 Ext: 200
tjarrard@kgdarchitects.com

Project Information

Project Title	Pelham Siwanoy A&A
Description of Work	Addition and alteration to Siwanoy ES
Contract Id No.	2025-1031
Project Locations(s)	489 Siwanoy Pl.
Route No / Street Address	
Village / City	Pelham
Town	
State / Zip	NY 10803
Nature of Project	Addition to Existing Structure
Approximate Bid Date/Service Date	08/01/2026
Checked Occupation(s)	Construction (Building, Heavy & Highway, Sewer, Water, Tunnel)

Applicable Counties

Westchester

- Agencies
- App Directory
- Counties
- Events
- Programs
- Services

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Intent of the Contract Documents.
4. Type of contract
5. Scope of Work – Separate Prime Contracts
6. Coordination of Work of Separate Prime Contracts
7. Work under Owner's Separate Contracts
8. Owner-Furnished, Contractor-Installed products
9. Owner-Furnished, Owner-Installed products
10. Work schedule and phasing
11. Access to site.
12. Coordination with occupants.
13. Work restrictions.
14. Specification and drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Additions and Alternations at the Siwanoy Elementary School for the Pelham Union Free School District.

1. The Work will be performed at the Siwanoy Elementary School located at 489 Siwanoy Place, Pelham, New York 10803.

B. Owner: Pelham Union Free School District, Pelham, NY.

C. Architect: The Contract Documents were prepared for the Project by KG+D Architects, PC.

D. Construction Manager: Triton Construction Company has been engaged as Construction Manager for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The scope of work of this project generally consists of Additions and Alterations to Siwanoy Elementary School as depicted on the accompanying Contract Drawings, Project Manual, Contracts for Construction, and subsequent Contract Amendments.

B. Work at Existing Site: Existing conditions are shown on the drawings to the best knowledge of the Architect. The Architect, however, cannot guarantee the correctness of the existing conditions shown and assumes no responsibility therefore. It shall be the responsibility of the Contractor to verify all existing conditions.

1. Contractor shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.

1.4 INTENT OF THE CONTRACT DOCUMENTS

A. If, in the interpretation of Contract Documents, requirements within the Drawings and Specifications conflict, or it appears that the Drawings and Specifications are not in agreement, the Contractor shall provide (1) the greater quantity, where there is a discrepancy in quantity, and (2) the superior quality, where there is a discrepancy in quality. All discrepancies shall be brought to the attention of the Architect. The Architect's decision on resolving the discrepancy shall be final.

B. If overlapping or duplicate contract work is shown in multiple contracts, each contract shall be responsible for providing that work. In the event an overlap or duplication of work across multiple contract is identified, the contractor(s) shall bring it to the attention of the Architect. The Architect shall determine which contractor is responsible for the work and the Owner may seek a credit change order from the contractor(s) not responsible for the work. In no case shall an overlap or duplication of work across contracts in the Construction Documents alleviate a contractor of an obligation to provide the work.

1.5 TYPE OF CONTRACT

A. The Work of the project will be let in four (4) or more Prime Contracts as follows:

1. Contract No. 1 - General Construction Work.
2. Contract No. 2 – Plumbing Work.
3. Contract No. 3 – HVAC Work.
4. Contract No. 4 -Electrical Work.
5. Contract No. 5 – Fire Protection

B. Responsibilities assigned to each separate Prime Contractor and the scope of the Work included in each contract is clearly identified in the Specifications and Drawings.

C. One set of Documents is issued covering all contracts. Each Prime Contractor shall review all drawings and specifications for complete understanding and knowledge of the Work.

1.6 SCOPE OF WORK – SEPARATE PRIME CONTRACTS

A. Each Prime Contractor is responsible for all of Procurement and Contracting Requirements (Division 00), General Requirements (Division 01).

B. All contractors are responsible to provide a complete installation of their work, a “turnkey” installation, as though there were no other contractors, with the exception of such work that is specifically indicated to be by another contractor.

C. Contract No. 1 – General Construction:

1. The General (GC) contractor is responsible for all Bidding and Contract Requirements, General Requirements (Divisions 00 & 01), and

    a. Drawings: General, Phasing and Logistics, Civil / Landscape, Structural, Hazardous Materials, Architectural, and Kitchen

    b. Project Manual Divisions 2 through 14 and 31 through 33.

    c. Provision of all General Construction with specific reference to all other components of the Contract Documents, to include Plumbing Work, Mechanical Work, Electrical Work, and Fire Protection Work and other Prime Contractor submittals.

    d. Provision of all General Construction in a coordinated manner with any other Owner Contractors, Vendors, or Employees.

2. Specific Attention is drawn to the following General Contractor responsibilities:

    a. Abatement of hazardous materials.

    b. Preparation and maintenance of a Contractor’s Schedule for submission to the Construction Manager.

    c. Cutting and Patching of required to complete contract work, cutting and patching shown on the General Construction drawings, and all cutting and patching associated with the exterior envelope – exterior walls, slabs on grade, foundation walls, and roofs.

    d. GC shall provide all saw-cutting, trenching, backfill and patching and disposal of waste and spoils for slabs on grade withing the building for the project. Bedding of under-slab utilities shall be provided by the Prime Contractor performing the work.

    e. Temporary facilities and controls, to include the responsibility to maintain a weather-tight building enclosure during periods of temporary heat and responsibility for provision of exterior temporary heat to complete General Construction work. Provision of exterior temporary heat shall be complete and include provision of any and all enclosures, heating equipment, fuel, monitoring, and maintenance.

f. Demolition of site utilities outside five feet from the building. Disconnection by other Prime Contractors and in accordance with Phasing and Logistics Plan.

g. The General Contractor shall provide all water, sewer / sanitary, and storm water utilities outside five feet of the building. The GC shall provide the grease trap.

h. The General Contractor shall provide all site utility trenching. Trenching shall include selective removal of site features (walks, curbs, lawns, drives, and the like), excavation, backfill, and restoration of surface features. The Prime Contractor responsible for the utility shall provide utility bedding. The Prime Contractor for the utility shall furnish required warning tapes to be installed by the General Contractor. The General Contractor shall dispose of trenching activity waste and spoils.

i. The General Contractor shall be responsible for removal, disposal, soil remediation, if necessary, and back fill of the underground heating fuel oil tank. This shall the tank, slabs, fill access, and underground piping outside of five feet from the building. The Mechanical Contractor and Electrical Contractor shall be required to disconnect the tank and accessories within five feet of the building and removal of all equipment and piping within five feet of the building footprint. The Mechanical Contractor shall be responsible for fuel oil and 'sludge' removal prior to decommissioning the tank.

j. The General Contractor shall provide the Kitchen Equipment, including setting in place.

k. Low voltage components, per the Low Voltage Responsibility Scope of Work Matrix, Drawing E703.

D. Contract No. 2 – Plumbing Construction:

1. The Plumbing Contractor (PC) contractor is responsible for all Bidding and Contract Requirements, General Requirements (Divisions 00 & 01), and

a. Drawings: General, Phasing and Logistics, Plumbing Drawings

b. Project Manual Division 22

c. Provision of all Plumbing Construction with specific reference to all other components of the Contract Documents and other Prime Contractor submittals.

d. Provision of all Plumbing Construction in a coordinated manner with any other Owner Contractors, Vendors, or Employees.

2. Specific Attention is drawn to the following Plumbing Contractor responsibilities:

a. Preparation and maintenance of a Contractor's Schedule for submission to the Construction Manager.

b. Temporary water facilities for construction areas.

c. Connection of Kitchen Equipment

d. Disconnection of all water, sewer / sanitary, storm water utilities within 5 feet of the building prior to site demolition.

e. Connection to all water, sewer / sanitary, storm water utilities to within five feet of the building.

E. Contract No. 3 – Mechanical Construction:

1. The Mechanical Contractor (MC) contractor is responsible for all Bidding and Contract Requirements, General Requirements (Divisions 00 & 01), and

a. Drawings: General, Phasing and Logistics, Mechanical Drawings

b. Project Manual Division 23

c. Provision of all Mechanical Construction with specific reference to all other components of the Contract Documents and other Prime Contractor submittals.

d. Provision of all Mechanical Construction in a coordinated manner with any other Owner Contractors, Vendors or Employees.

2. Specific Attention is drawn to the following Mechanical Contractor responsibilities:

a. Preparation and maintenance of a Contractor's Schedule for submission to the Construction Manager.

b. Connection of Kitchen Equipment

c. Temporary requirements related to maintaining the existing heating plant operation during construction of the Classroom Addition, per the Phasing and Logistics Plans.

d. Temporary heat withing the building envelope.

e. The Mechanical Contractor shall be required to disconnect the underground heating fuel tank and accessories within five feet of the building and removal of all equipment and piping within five feet of the building footprint. The Mechanical Contractor shall be responsible for fuel oil and 'sludge' removal prior to decommissioning the tank.

f. Provision of Direct Digital Controls in conformance with the Owner's

requirement for Schneider Electric Ecostruxure.

g. Commissioning of Mechanical equipment, to include functional performance testing and training of Owner personnel.

F. Contract No. 4 – Electrical Construction:

1. The Electrical Contractor (EC) contractor is responsible for all Bidding and Contract Requirements, General Requirements (Divisions 00 & 01), and

a. Drawings: General, Phasing and Logistics, Electrical Drawings

b. Project Manual Divisions 26 through 28

c. Provision of all Electrical Construction with specific reference to all other components of the Contract Documents and other Prime Contractor submittals.

d. Provision of all Electrical Construction in a coordinated manner with any other Owner Contractors, Vendors or Employees.

2. Specific Attention is drawn to the following Electrical Contractor responsibilities:

a. Preparation and maintenance of a Contractor's Schedule for submission to the Construction Manager.

b. Temporary facilities, to include temporary power and lighting in construction areas.

c. Connection of Kitchen Equipment, including fire suppression system.

d. The Electrical Contractor shall be required to disconnect the fuel tank equipment and remove of any associated electrical wiring within five feet of the building footprint.

e. Provision of the new fire alarm system and modification of the existing system during construction to maintain full-time, complete operation.

f. Low voltage components, per the Low Voltage Responsibility Scope of Work Matrix, Drawing E703.

G. Contract No. 5 – Fire Protection Construction:

1. The Fire Protection Contractor (FPC) contractor is responsible for all Bidding and Contract Requirements, General Requirements (Divisions 00 & 01), and

a. Drawings: General, Phasing and Logistics, Fire Protection Drawings

b. Project Manual Division 21

c. Provision of all Fire Protection Construction with specific reference to all other components of the Contract Documents and other Prime Contractor submittals.

d. Provision of all Fire Protection Construction in a coordinated manner with any other Owner Contractors, Vendors or Employees.

2. Specific Attention is drawn to the following Fire Protection Contractor responsibilities:

a. Preparation and maintenance of a Contractor's Schedule for submission to the Construction Manager.

b. Fire water service scope of work with reference to General Contractor site work and Plumbing Contractor DCDA BFP.

c. Coordination Drawings requirement to confirm pipe routing and head layout.

H. All Prime Contractors are responsible to provide a complete installation of their work with the exception of such work that is specifically indicated to be by another Contractor. Exceptions or clarifications are as follows:

1. Cutting and patching in the existing building generally will be by the trade needing that work. When mechanical or electrical work is above a ceiling, not being replaced by the GC, the Prime doing that work will be responsible for providing their own access and restoration.
2. Exceptions for cutting and patching at the existing building will be:
   a. The GC will be responsible for penetrations through the existing façade and roof.
   b. The GC is responsible for slab cutting, trenching, patching for slabs on grade.
3. All trades shall coordinate, schedule, and sequence work so no cutting and patching is required in new work (or the trade failing to comply would be responsible).
4. The EC may coordinate their conduit to be in the gravel layer under new slab on grade. They may run non-crossing conduit on the deck, perpendicular or parallel to column lines, provided conduit do not cross or otherwise impact on slabs over 1". Conduit that would cross, are larger than 1", or would otherwise impact slabs by more than 1, will be run by EC by other routes.
5. Fire-safing / fire-stopping will be by the trade needing / installing that work.
6. All trades to provide access doors as required by their work, to be installed by the GC.

1.7 COORDINATION OF WORK OF SEPARATE PRIME CONTRACTS

A. The Construction Manager is the Project Coordinator and shall be responsible for coordination between the Separate Prime Contracts, other Owner Contractors or

Vendors, and the Owner's employees.

1.8 WORK UNDER OWNER'S SEPARATE CONTRACTS

A. General: Cooperate fully with Owner's separate contractors, so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under Owner's separate contracts

B. Concurrent Work: Owner has awarded separate contract(s) for the following construction operations at Project site(s). Those operations will be conducted simultaneously with Work under this Contract.

1. Low voltage work including access control and security system; refer to Drawing E-703 for additional information.

1.9 OWNER-FURNISHED CONTRACTOR-INSTALLED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.

B. Owner-Furnished Contractor-Installed Products:

1. Low voltage components including telephone and wireless access points (WAP); refer to Drawing E-703.
2. Toilet accessories.

1.10 OWNER-FURNISHED OWNER-INSTALLED PRODUCTS

A. Owner will furnish and install products indicated

B. Owner-Furnished Owner-Installed Products:

1. Low voltage network switches/servers/racks. Refer to Drawing E-703

1.11 WORK SCHEDULE AND PHASING

A. The Work shall be conducted in accordance with the logistics and phasing drawings and the Project Bid/Milestone Schedules attached to this Section. The Bid/Milestone Schedule shows the Construction Manager's suggested sequence for executing the various parts of the Work.

B. Work may be commenced in the building and on the site upon receipt of Notice to Proceed issued by the Owner; approximate dates are indicated in the Project Milestone Schedule(s) attached to this Section.

1.12 ACCESS TO SITE

A. Limits: Confine constructions operations to areas within contract limits indicated. Do not

disturb portions of the building and site beyond the areas in which the Work is indicated. All areas of the building and site with the exception of the project area where the Work is being performed are off limits to Contractor and his employees.

1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, students, the public and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
    c. Coordinate staging and storage areas with the Construction Manager.

B. Damages: Promptly repair damages caused to adjacent facilities by work of the Contract to a good-as-new condition acceptable to the Owner.

C. Existing Facilities: The following facilities are specifically noted as not to be used by Contractor or their employees:

1. Toilet facilities
2. Food service facilities, including kitchen and dining areas.
3. Parking lots
4. Telephones.

D. Security: The Contractor and all employees of the contractor shall be subject to the security provisions required by the Owner. Such provisions shall include, but not be limited to, the following:

1. Contractor and all their employees shall use a single means of access and egress to the building, except in the case of emergency, as designated by the Construction Manager.
2. Photo identification badges shall be procured for all persons entering the Project building or site and shall be worn continuously while the person is in the building or on the site.
3. All persons entering the building or site shall be subject to the Owner’s visitor management system and may be subject to fingerprinting or other security-related screenings.
4. Contractor shall maintain a daily list of their personnel at the Project site.

1.13 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and building during entire construction period. Cooperate with Construction Manager during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations.

1. Maintain access to existing adjacent occupied or used facilities. Do not close or

obstruct adjacent drives, walkways, or other occupied or used facilities other than those obstructions currently indicated on the Contract Documents without written permission from Construction Manager.

2. There will be no school operations during summer months when school is not in session.

B. Utility Shutdowns: Coordinate all utility shut downs and cross overs with the Construction Manager, schedule during off hours and non-occupied times only.

1. Notify Construction Manager not less than 72 hours in advance of activities that will affect Owner's operations. Include planned shut-downs and interruptions in Construction Schedule.
2. Electrical and mechanical services to functioning spaces shall be maintained at all times. Swing-overs to new services shall be made so as to cause the least interruption to the facilities' operations

C. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
3. On occupancy, Owner will assume responsibility for custodial service for occupied portions of Work.

1.14 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

B. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction

C. On-Site Work Hours and Days: Limit work on the site and in the building to working hours indicated below, Monday through Friday, unless otherwise indicated.

1. The school will be closed on Saturdays, Sundays, regularly scheduled district holidays and school vacations, and at night after cleaning crews have finished. If any Contractor wishes to work a weekend, holiday, or after 4:00 pm, that Contractor must receive prior approval by the Construction Manager and may be required to pay for custodial services for the building at the applicable district pay rates. All work taking place within the schools/buildings/grounds on weekends, holidays and school vacations must be approved in advance by the Construction Manager.

2. Work Hours shall be limited to:

	Exterior Construction	Unoccupied Interior Areas	Occupied Interior Areas
School-in-Session :			
Weekdays	7 am – 4 pm	7 am – 11 pm	3 pm – 11 pm
Weekends / Holidays	8 am – 4 pm	7 am – 11 pm	7 am – 11 pm
School Breaks:			
Weekdays	7 am – 4 pm	7 am – 11 pm	7 am – 11 pm
Weekends / Holidays	8 am – 4 pm	7 am – 11 pm	7 am – 11 pm

3. Pelham Manor restricts gasoline power leaf blowers, and similar equipment outside the hours of 8:00 am to 5:30 pm on weekdays, and 12:00 pm to 4:00 pm on weekends and holidays.
4. Any special work arrangements must be made through the Construction Manager.
5. Blackout Dates (No work is permitted at the building or site): Concerts and testing dates, other days as directed by the Owner. Allow for 12 blackout days, per calendar year, taken during the weekdays, as selected by the Owner.
6. The school district's academic calendar listing school-in-session period, summer period, school holidays and vacation days, and Regents Exam days can be found here https://www.pelhamschools.org/district/calendar

D. Delivery Restrictions: Coordinate with the Construction Manager for permissible times and locations/truck access for deliveries on site. Large deliveries shall be made after hours.

E. Noise, Vibration, and Odors: Notify Construction Manager and coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to surrounding spaces.

1. Notify Construction Manager not less than two days in advance of proposed disruptive operations.
2. Construction activity noise levels for a period extending from the reading days before exams until the final day of exams (ten days) shall not exceed 60 dBA.

F. Comply with Owner's standards for construction projects as follows:

1. Interaction with employees, students and the public is strictly forbidden.
2. Use of offensive or inappropriate language is strictly forbidden.
3. The use of radios or speakers is prohibited on the site.
4. Smoking and vaping are prohibited on the sites and in the buildings.
5. Fraternizing with students or staff at the schools is prohibited.
6. Use of controlled substances, cannabis and alcohol on Project site is not

permitted.

1.15 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

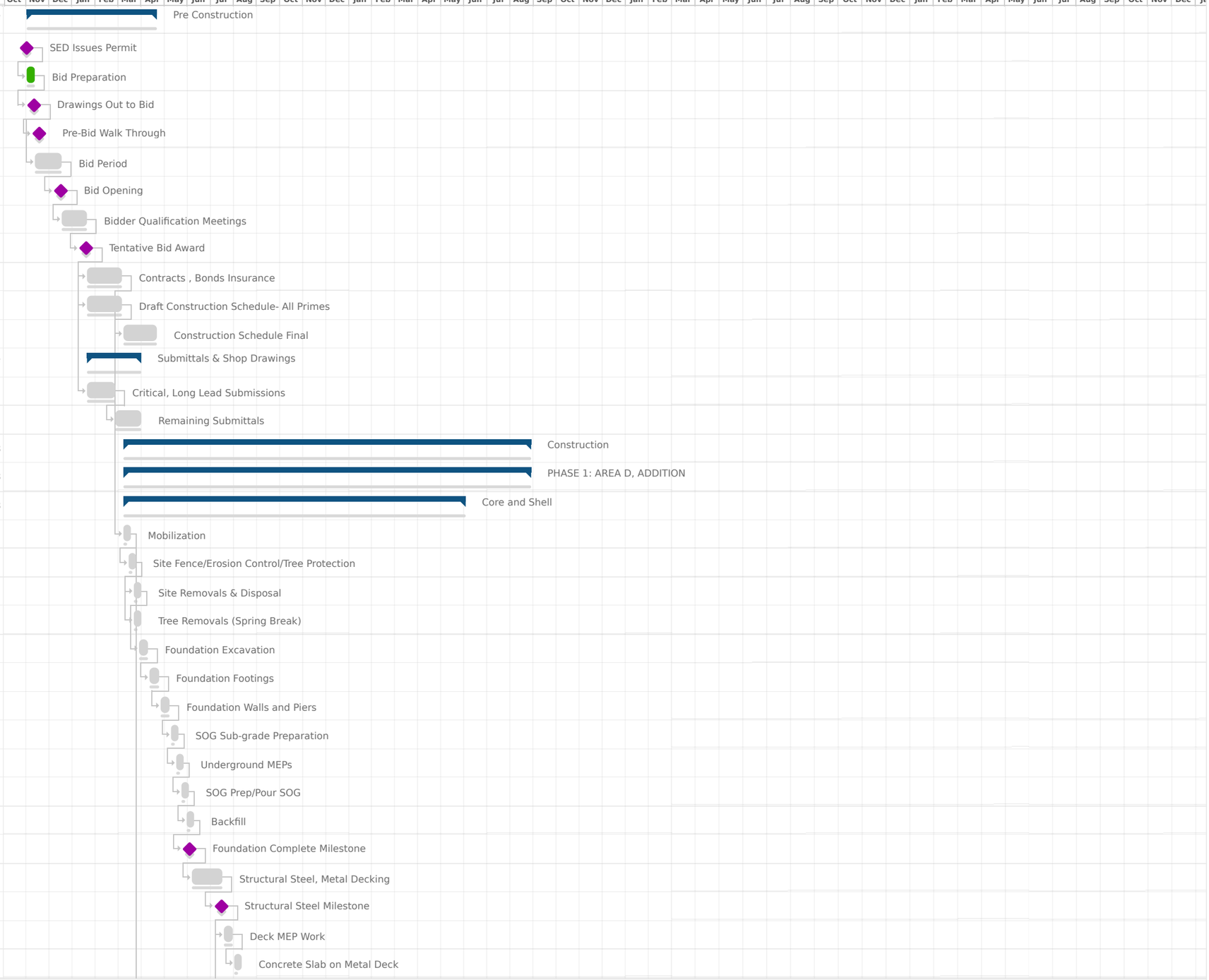
END OF SECTION 011000

Attachments:
Project Bid/Milestone Schedule

Pelham Union Free School District - 2025 Capital Improvement Project

Siwanoy Elementary School - Additions & Alterations: Bid Schedule

#	Activity	Start	Duration	End
1	**– Pre Construction**	**11/02/26**	**122 days**	**04/20/27**
2	SED Issues Permit	11/02/26	0 days	11/02/26
3	Bid Preparation	11/02/26	9 days	11/12/26
4	Drawings Out to Bid	11/12/26	0 days	11/12/26
5	Pre-Bid Walk Through	11/18/26	0 days	11/18/26
6	Bid Period	11/13/26	25 days	12/17/26
7	Bid Opening	12/17/26	0 days	12/17/26
8	Bidder Qualification Meetings	12/18/26	24 days	01/20/27
9	Tentative Bid Award	01/20/27	0 days	01/20/27
10	Contracts , Bonds Insurance	01/21/27	32 days	03/05/27
11	Draft Construction Schedule- All Primes	01/21/27	32 days	03/05/27
12	Construction Schedule Final	03/08/27	32 days	04/20/27
13	**– Submittals & Shop Drawings**	**01/21/27**	**50 days**	**03/31/27**
14	Critical, Long Lead Submissions	01/21/27	25 days	02/24/27
15	Remaining Submittals	02/25/27	25 days	03/31/27
16	**– Construction**	**03/08/27**	**386 days**	**08/28/28**
17	**– PHASE 1: AREA D, ADDITION**	**03/08/27**	**386 days**	**08/28/28**
18	**– Core and Shell**	**03/08/27**	**325 days**	**06/02/28**
19	Mobilization	03/08/27	5 days	03/12/27
20	Site Fence/Erosion Control/Tree Protection	03/15/27	5 days	03/19/27
21	Site Removals & Disposal	03/22/27	5 days	03/26/27
22	Tree Removals (Spring Break)	03/22/27	5 days	03/26/27
23	Foundation Excavation	03/29/27	10 days	04/09/27
24	Foundation Footings	04/12/27	10 days	04/23/27
25	Foundation Walls and Piers	04/26/27	10 days	05/07/27
26	SOG Sub-grade Preparation	05/10/27	5 days	05/14/27
27	Underground MEPs	05/17/27	5 days	05/21/27
28	SOG Prep/Pour SOG	05/24/27	5 days	05/28/27
29	Backfill	05/31/27	5 days	06/04/27
30	Foundation Complete Milestone	06/04/27	0 days	06/04/27
31	Structural Steel, Metal Decking	06/07/27	30 days	07/16/27
32	Structural Steel Milestone	07/16/27	0 days	07/16/27
33	Deck MEP Work	07/19/27	10 days	07/30/27
34	Concrete Slab on Metal Deck	08/02/27	5 days	08/06/27



General

Parent Activity
Child Activity
Activity Baseline
Milestone Baseline
Milestone
(+# days) Delay
Links

Status

Completed
Overdue
Ahead
Uninitiated

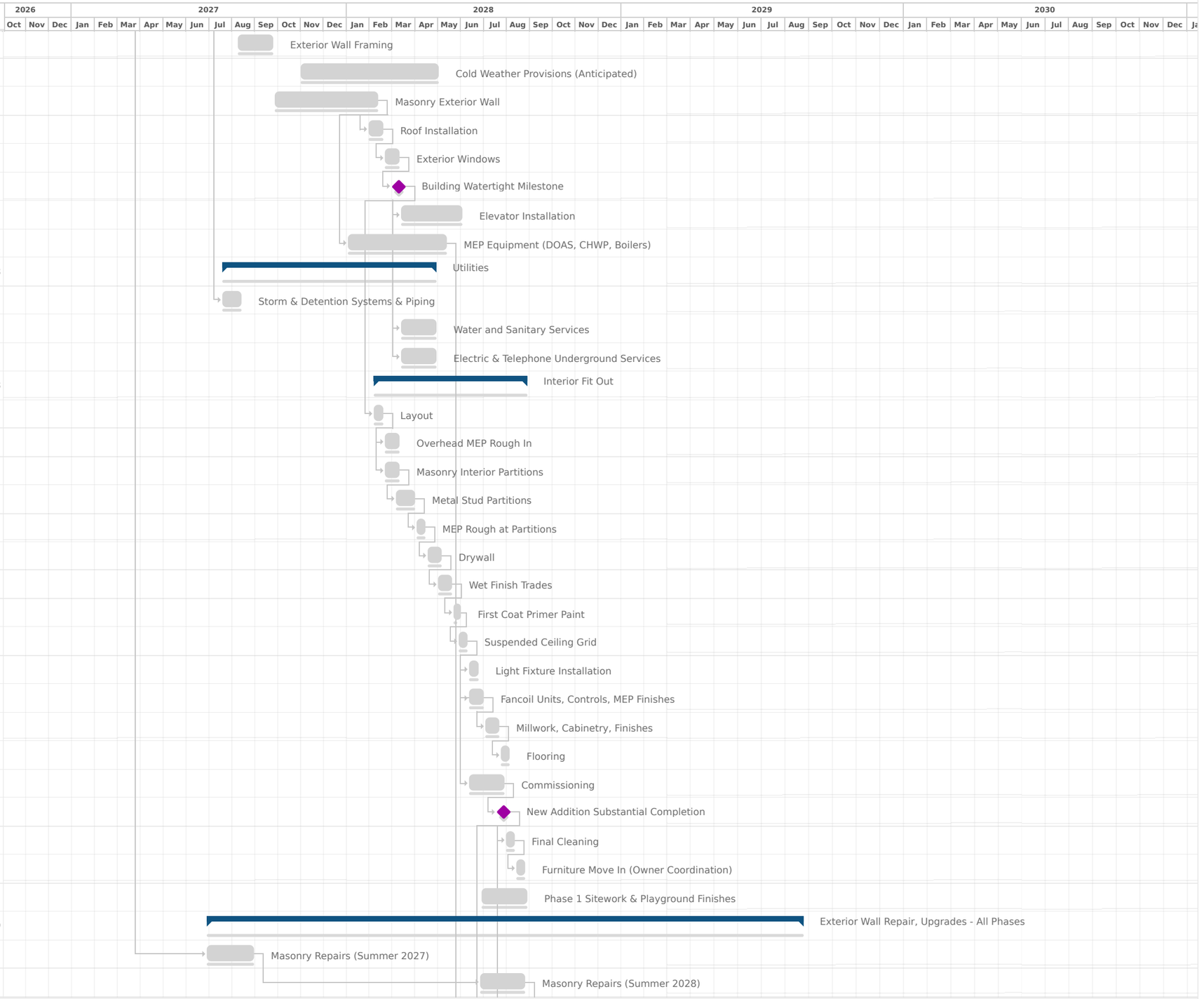
Printed on: **11/12/26**

TRITON CONSTRUCTION

Pelham Union Free School District - 2025 Capital Improvement Project

Siwanoy Elementary School - Additions & Alterations: Bid Schedule

#	Activity	Start	Duration	End
35	Exterior Wall Framing	08/09/27	35 days	09/24/27
36	Cold Weather Provisions (Anticipated)	11/01/27	131 days	05/01/28
37	Masonry Exterior Wall	09/27/27	100 days	02/11/28
38	Roof Installation	01/31/28	15 days	02/18/28
39	Exterior Windows	02/21/28	15 days	03/10/28
40	Building Watertight Milestone	03/10/28	0 days	03/10/28
41	Elevator Installation	03/13/28	60 days	06/02/28
42	MEP Equipment (DOAS, CHWP, Boilers)	01/03/28	95 days	05/12/28
43	**– Utilities**	**07/19/27**	**205 days**	**04/28/28**
44	Storm & Detention Systems & Piping	07/19/27	20 days	08/13/27
45	Water and Sanitary Services	03/13/28	35 days	04/28/28
46	Electric & Telephone Underground Services	03/13/28	35 days	04/28/28
47	**– Interior Fit Out**	**02/07/28**	**146 days**	**08/28/28**
48	Layout	02/07/28	10 days	02/18/28
49	Overhead MEP Rough In	02/21/28	15 days	03/10/28
50	Masonry Interior Partitions	02/21/28	15 days	03/10/28
51	Metal Stud Partitions	03/06/28	20 days	03/31/28
52	MEP Rough at Partitions	04/03/28	10 days	04/14/28
53	Drywall	04/17/28	15 days	05/05/28
54	Wet Finish Trades	05/01/28	15 days	05/19/28
55	First Coat Primer Paint	05/22/28	5 days	05/26/28
56	Suspended Ceiling Grid	05/29/28	10 days	06/09/28
57	Light Fixture Installation	06/12/28	10 days	06/23/28
58	Fancoil Units, Controls, MEP Finishes	06/12/28	15 days	06/30/28
59	Millwork, Cabinetry, Finishes	07/03/28	15 days	07/21/28
60	Flooring	07/24/28	10 days	08/04/28
61	Commissioning	06/12/28	35 days	07/28/28
62	**New Addition Substantial Completion**	07/28/28	0 days	07/28/28
63	Final Cleaning	07/31/28	10 days	08/11/28
64	Furniture Move In (Owner Coordination)	08/14/28	10 days	08/25/28
65	Phase 1 Sitework & Playground Finishes	06/28/28	44 days	08/28/28
66	**– Exterior Wall Repair, Upgrades - All Phases**	**06/28/27**	**565 days**	**08/24/29**
67	Masonry Repairs (Summer 2027)	06/28/27	46 days	08/30/27
68	Masonry Repairs (Summer 2028)	06/26/28	45 days	08/25/28



General

Parent Activity
Child Activity
Activity Baseline
Milestone Baseline
Milestone
(+# days) Delay
Links

Status

Completed
Overdue
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Uninitiated

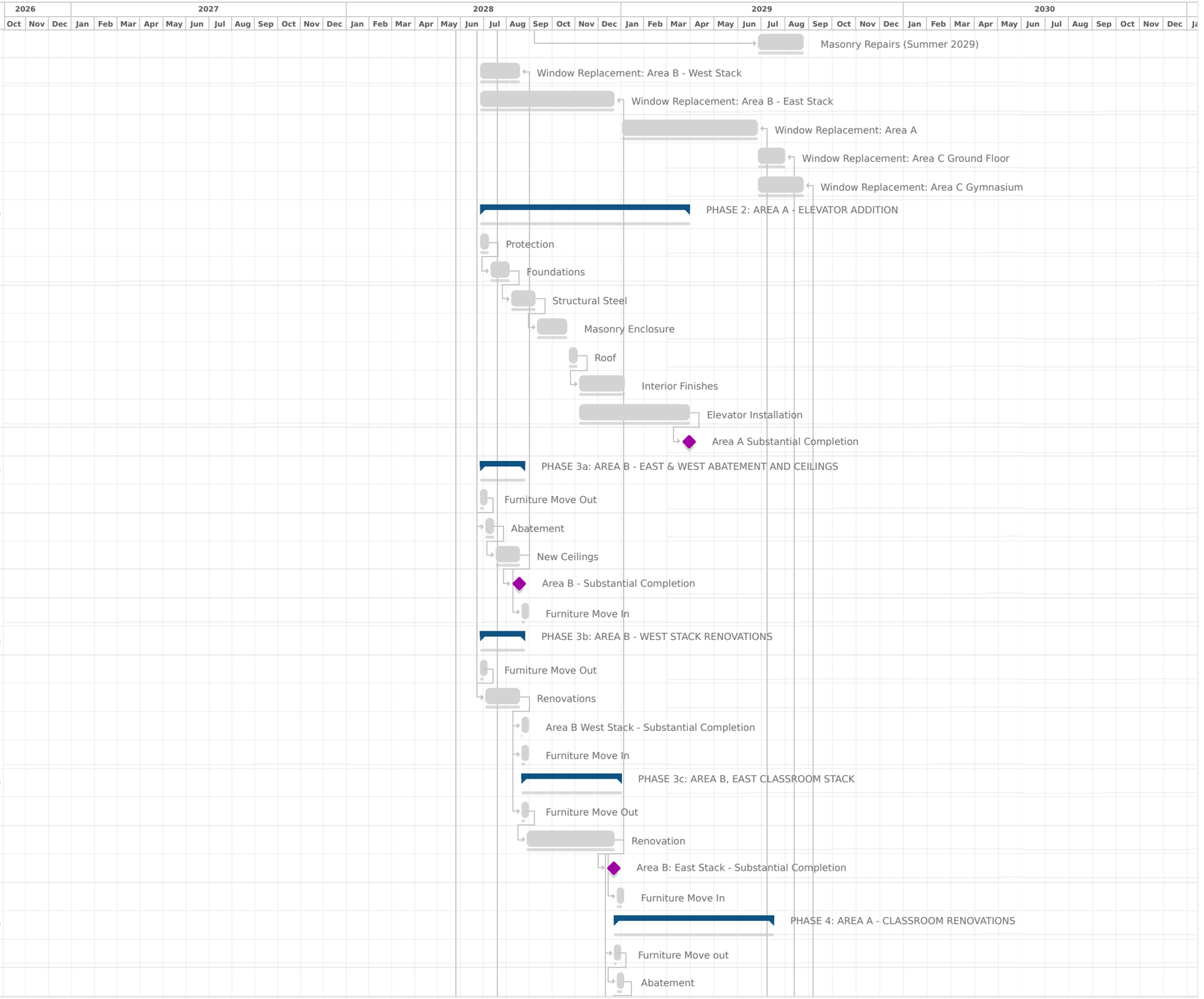
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TRITON CONSTRUCTION

Pelham Union Free School District - 2025 Capital Improvement Project

Siwanoy Elementary School - Additions & Alterations: Bid Schedule

#	Activity	Start	Duration	End
69	Masonry Repairs (Summer 2029)	06/26/29	44 days	08/24/29
70	Window Replacement: Area B - West Stack	06/26/28	40 days	08/18/28
71	Window Replacement: Area B - East Stack	06/26/28	130 days	12/22/28
72	Window Replacement: Area A	01/02/29	125 days	06/25/29
73	Window Replacement: Area C Ground Floor	06/26/29	26 days	07/31/29
74	Window Replacement: Area C Gymnasium	06/26/29	44 days	08/24/29
75	**– PHASE 2: AREA A - ELEVATOR ADDITION**	**06/26/28**	**200 days**	**03/30/29**
76	Protection	06/26/28	10 days	07/07/28
77	Foundations	07/10/28	20 days	08/04/28
78	Structural Steel	08/07/28	25 days	09/08/28
79	Masonry Enclosure	09/11/28	30 days	10/20/28
80	Roof	10/23/28	10 days	11/03/28
81	Interior Finishes	11/06/28	45 days	01/05/29
82	Elevator Installation	11/06/28	105 days	03/30/29
83	Area A Substantial Completion	03/30/29	0 days	03/30/29
84	**– PHASE 3a: AREA B - EAST & WEST ABATEMENT AND CEILINGS**	**06/26/28**	**45 days**	**08/25/28**
85	Furniture Move Out	06/26/28	5 days	06/30/28
86	Abatement	07/03/28	10 days	07/14/28
87	New Ceilings	07/17/28	25 days	08/18/28
88	Area B - Substantial Completion	08/18/28	0 days	08/18/28
89	Furniture Move In	08/21/28	5 days	08/25/28
90	**– PHASE 3b: AREA B - WEST STACK RENOVATIONS**	**06/26/28**	**45 days**	**08/25/28**
91	Furniture Move Out	06/26/28	5 days	06/30/28
92	Renovations	07/03/28	35 days	08/18/28
93	Area B West Stack - Substantial Completion	08/21/28	1 day	08/21/28
94	Furniture Move In	08/21/28	5 days	08/25/28
95	**– PHASE 3c: AREA B, EAST CLASSROOM STACK**	**08/21/28**	**96 days**	**01/01/29**
96	Furniture Move Out	08/21/28	5 days	08/25/28
97	Renovation	08/28/28	85 days	12/22/28
98	Area B: East Stack - Substantial Completion	12/22/28	0 days	12/22/28
99	Furniture Move In	12/26/28	5 days	01/01/29
100	**– PHASE 4: AREA A - CLASSROOM RENOVATIONS**	**12/22/28**	**147 days**	**07/16/29**
101	Furniture Move out	12/22/28	2 days	12/25/28
102	Abatement	12/26/28	5 days	01/01/29



General

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Links

Status

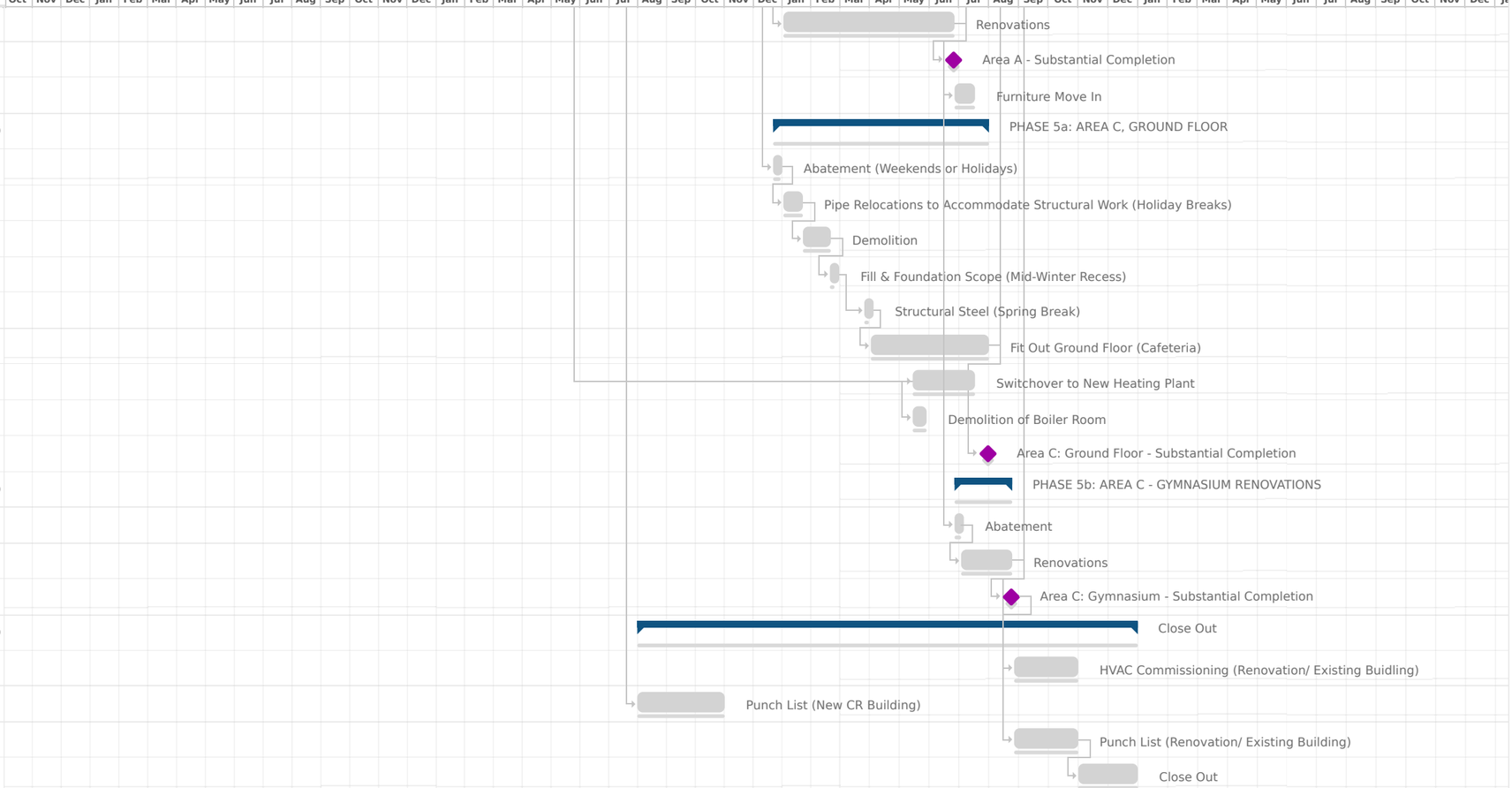
Completed
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Printed on: **11/12/26**

Pelham Union Free School District - 2025 Capital Improvement Project

Siwanoy Elementary School - Additions & Alterations: Bid Schedule

#	Activity	Start	Duration	End
103	Renovations	01/02/29	125 days	06/25/29
104	Area A - Substantial Completion	06/25/29	0 days	06/25/29
105	Furniture Move In	06/26/29	15 days	07/16/29
106	**– PHASE 5a: AREA C, GROUND FLOOR**	**12/22/28**	**158 days**	**07/31/29**
107	Abatement (Weekends or Holidays)	12/22/28	6 days	12/29/28
108	Pipe Relocations to Accommodate Structural Work (Holiday Breaks)	01/02/29	15 days	01/22/29
109	Demolition	01/23/29	20 days	02/19/29
110	**Fill & Foundation Scope (Mid-Winter Recess)**	02/19/29	5 days	02/23/29
111	**Structural Steel (Spring Break)**	03/26/29	5 days	03/30/29
112	Fit Out Ground Floor (Cafeteria)	04/02/29	87 days	07/31/29
113	**Switchover to New Heating Plant**	05/15/29	45 days	07/16/29
114	Demolition of Boiler Room	05/15/29	10 days	05/28/29
115	Area C: Ground Floor - Substantial Completion	07/31/29	0 days	07/31/29
116	**– PHASE 5b: AREA C - GYMNASIUM RENOVATIONS**	**06/26/29**	**44 days**	**08/24/29**
117	Abatement	06/26/29	5 days	07/02/29
118	Renovations	07/03/29	39 days	08/24/29
119	Area C: Gymnasium - Substantial Completion	08/24/29	0 days	08/24/29
120	**– Close Out**	**07/31/28**	**371 days**	**12/31/29**
121	HVAC Commissioning (Renovation/ Existing Buidling)	08/27/29	48 days	10/31/29
122	Punch List (New CR Building)	07/31/28	67 days	10/31/28
123	Punch List (Renovation/ Existing Building)	08/27/29	48 days	10/31/29
124	Close Out	11/01/29	43 days	12/31/29



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Printed on: **11/12/26**

SECTION 011011 - REGULATIONS OF THE COMMISSIONER OF EDUCATION - 8 NYCRR 155.5 - UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Regulations of the Commissioner of Education - 8 NYCRR 155.5 - Uniform Safety Standards for School Construction and Maintenance Projects.

1.2 REGULATIONS OF THE COMMISSIONER OF EDUCATION - 8 NYCRR 155.5 - UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS

A. This Article indicates requirements for school construction and maintenance projects required under New York Codes Rules and Regulations, Regulations of the Commissioner of Education, Part 155, Section 155.5, and are binding on all Contracts of this Project.

B. The occupied portion of the school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.

C. Comply with general safety and security standards for construction projects as follows:

1. Store all construction materials in a safe and secure manner.
2. Provide and maintain fences around construction supplies or debris.
3. Maintain all gates locked at all times when school is in session, unless a worker is in attendance to prevent unauthorized entry.
4. Provide overhead protection during exterior renovation work, for any sidewalks or areas immediately beneath the work site, or fence off such areas and provide with warning signs to prevent entry.
5. Provide all workers with photo-identification badges that are required to be worn at all times for identification and security purposes while working at the project site.

D. Separation of Construction Areas from Occupied Spaces: Separate construction areas which are under the control of a contractor and therefore not occupied by district staff or students from occupied areas. Provide dust proof partitions to prevent dust and contaminants into occupied parts of the building. Provide periodic inspection and repairs of the containment barriers to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

1. Workers may not use corridors, stairs or elevators designated for students or school staff.

2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. No movement of debris through halls of occupied spaces of the building is permitted. No material shall be dropped or thrown outside the walls of the building.
3. Clean all occupied parts of the building affected by renovation activity at the close of each workday. Maintain required health, safety and educational capabilities at all times for school buildings occupied during a construction project when classes are in session.

E. Exiting: Maintain all building exits during construction. Comply with exiting plans incorporated in the Construction Documents. If exiting is modified other than as shown on the Contract Documents, provide a plan for Architect's review detailing how exiting required by the applicable building code will be maintained during construction. The plan shall indicate temporary construction required to isolate construction equipment, materials, people, dust, fumes, odors, and noise during the construction period. Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.

F. Ventilation: Comply with the ventilation plan incorporated in the Construction Documents. The plan shall indicate ductwork which must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building. The plan shall also indicate how required ventilation to occupied spaces affected by construction will be maintained during the project.

G. Fire and Hazard Prevention: Areas of buildings under construction that are to remain occupied shall maintain a certificate of occupancy. In addition, the following shall be strictly enforced:

1. No smoking is allowed on public school property, including construction areas.
2. During construction daily inspections of district occupied areas shall be conducted by the Contractor's personnel to assure that construction materials, equipment or debris do not block fire exits or emergency egress windows.
3. Proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems shall be maintained throughout the project.

H. Noise Abatement During Construction Activities: Contain noise from construction operations so as to not produce noise in excess of 60 dba in occupied spaces when school is in session, or schedule work for times when the building or affected building spaces are not occupied (school is not in session), or provide acoustical abatement measures to reduce noise to acceptable levels.

1. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of the noise.

I. Control of Chemical Fumes, Gases, and Other Contaminants during Construction and Maintenance Projects: Control exhaust fumes from welding, gasoline engines, roofing,

paving, painting, VOC fumes, or other fumes to assure they do not enter occupied portions of the building or fresh air intakes.

1. Schedule, cure or ventilate materials and activities to allow for "off-gassing" of volatile organic compounds introduced during construction before occupancy of school. Specific attention is warranted for materials and activities including, but not limited to, glues, paint, furniture, carpeting, wall coverings, and drapery.

    a. Air out building materials or furnishings which "off-gas" chemical fumes, gases, or other contaminants in one of the following manners:
        1) Air out in a well-ventilated heated warehouse before they are brought to the project for installation.
        2) Air out installed products in accordance with the manufacturer's recommended "off-gassing" periods by allowing this period of time to elapse prior to Substantial Completion date.

    b. If the work will generate toxic gases that cannot be contained in an isolated area, the work must be done when school classes and programs are not in session. The building must be properly ventilated and the material must be given proper time to cure or "off-gas" before re-occupancy.

2. Manufacturer's Material Safety Data Sheets (MSDS) shall be maintained at the site for all products used in the project. MSDS must be provided to anyone who requests them.

J. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. Note, It is The State Education Department’s interpretation that the term "building", as referenced in this Paragraph, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non combustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.

1. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

K. Lead-Based Paint Sampling and Analysis Notification: Surfaces containing lead will not be disturbed during construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011011

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Contingency allowances.
2. Quantity allowances

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.2 DEFINITIONS

A. Allowances: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order

1.8 QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

D. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed

1.9 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance,

multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1 – Contingency Allowance: Include in the Base Bid a contingency allowance per Prime Contract of the following amounts to be used in accordance with Owner's written instructions.

1. Contingency Allowance for Contract No. 1 General Construction Work: $200,000.00
2. Contingency Allowance for Contract No. 2 Plumbing Work: $25,000.00
3. Contingency Allowance for Contract No. 3 HVAC Work: $100,000.00
4. Contingency Allowance for Contract No. 4 Electrical Work: $75,000.00
5. Contingency Allowance for Contract No. 5 Fire Protection Work: $10,000.00

B. Allowance No. 2 - Rock Removal and Disposal, Trench Excavation (Quantity Allowance): Include in the Base Bid the following quantities of rock removal and disposal at trench excavations; note the rock measurement requirements set forth in Section 312000. Additions or subtractions, if necessary, to this contract quantity shall be made utilizing Unit Price No. 1 – Rock Removal and Disposal, Trench Excavation.

1. Base Bid Allowance Quantities: 15 cubic yards of trench rock excavation shall be included in the base bid and shall represent the total quantity of contract work to be performed.
2. Applicable Contracts:
   a. Contract No. 1 – General Construction Work

C. Allowance No. 3 - Rock Removal and Disposal, Mass Excavation (Quantity Allowance): Include in the Base Bid the following quantities of rock removal and disposal at mass excavations; note the rock measurement requirements set forth in Section 312000. Additions or subtractions, if necessary, to this contract quantity shall be made utilizing Unit Price No. 2 – Rock Removal and Disposal, Mass Excavation.

1. Base Bid Allowance Quantities: 200 cubic yards of mass rock excavation shall be included in the base bid and shall represent the total quantity of contract work to be performed.
2. Applicable Contracts:
   a. Contract No. 1 – General Construction Work.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes**,** overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1 – Rock Removal and Disposal, Trench Excavation: All work required for rock removal and disposal at trench excavations per the Drawings and Division 31 spec sections.
   1. Unit of Measurement: Per cubic yard, measured in place.
   2. Base Bid includes an allowance for 15 cubic yards of rock removal and disposal at trench excavations. Refer to Section 012100 “Allowances” for additional information.
   3. Applicable to Contract 1- General Construction Work.

B. Unit Price No. – Rock Removal and Disposal, Mass Excavation: All work required for rock removal and disposal at mass excavations per the Drawings and Division 31 spec sections.
   1. Unit of Measurement: Per cubic yard, measured in place.
   2. Base Bid includes an allowance for 200 cubic yards of rock removal and disposal at mass excavations. Refer to Section 012100 “Allowances” for additional information.
   3. Applicable to Contract 1 - General Construction Work.

C. Unit Price No. 3 – Abatement Work Re-Mobilization (Small Containment Areas) Outside of Base Bid Work: All work required for small containment preparation to enclose small abatement areas less than 60 SF or 260 LF.

   1. Unit of Measurement: Per occurrence, measured in place.
   2. Base Bid includes amounts as indicated on Drawings.
   3. Applicable to Contract 1 - General Construction Work

D. Unit Price No. 4 – Abatement Work Re-Mobilization (Large Containment Areas) Outside of Base Bid Work: All work required for large containment preparation to enclose large abatement areas greater than 60 SF or 260 LF.

   1. Unit of Measurement: Per occurrence, measured in place.
   2. Base Bid includes amounts as indicated on Drawings.
   3. Applicable to Contract 1 - General Construction Work

E. Unit Price No. 5 - Abatement of Plaster Ceilings: All work required for abatement of existing plaster ceilings.

   1. Unit of Measurement: Per square foot, measured in place.
   2. Base Bid includes amounts as indicated on Drawings.
   3. Applicable to Contract 1 - General Construction Work

F. Unit Price No. 6 - Abatement of Floor Tile and Underlying Mastic: All work required for abatement of existing floor tile with underlying mastic.

   1. Unit of Measurement: Per square foot, measured in place.
   2. Base Bid includes amounts as indicated on Drawings.
   3. Applicable to Contract 1 - General Construction Work

G. Unit Price No. 7 - Abatement of Wall Base and Underlying Mastic: All work required for abatement of existing wall base with underlying mastic.

   1. Unit of Measurement: Per square foot, measured in place.
   2. Base Bid includes amounts as indicated on Drawings.
   3. Applicable to Contract 1 - General Construction Work

H. Unit Price No. 8 - Abatement of Thermal System Insulation (TSI): All work required for abatement of ACM pipe insulation and fittings.

   1. Unit of Measurement: Per linear foot, measured in place.

2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work

I. Unit Price No. 9 – Abatement of Waterproofing Behind Walls and Under Bathroom Floors: All work required for abatement of waterproofing behind walls and under bathroom floors.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work

J. Unit Price No. 10 – Abatement of Waterproofing Behind Brick or Below Grade: All work required for abatement of waterproofing behind brick or below grade.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work

K. Unit Price No. 11 - Abatement of Concealed Under Slab Waterproofing Barrier: All work required for abatement of concealed under slab waterproofing barrier.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work

L. Unit Price No. 12 - Abatement of Concealed Mastic Behind Tackboards/Whiteboards: All work required for abatement of concealed mastic behind tackboards/whiteboards.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work

M. Unit Price No 13 - Clean Brick Masonry (Mark BC): All work required for brick masonry cleaning (remove efflorescence) per Section 049300.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work.

N. Unit Price No 14 - Clean Cast Stone (Mark C): All work required for cast stone cleaning (remove rust) per Section 049300.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work

O. Unit Price No 15 - Clean and Coat Lintels (Mark LC): All work required for cleaning and coating lintels per Section 040120.

1. Unit of Measurement: Per linear foot, measured in place.

2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work

P. Unit Price No. 16 – Brick Removal and Replacement (Mark MR): All work required for removing and replacing existing bricks as per Details 3/A330 and 4/A330 and Specification Section 040120.

1. Unit of Measurement: Per each brick, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 -- General Construction Work

Q. Unit Price No. 17 – Patch Stone (Mark PS): All work required for patching stone as per Detail 6/A330 and Specification Section 040120.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

R. Unit Price No. 18 – Brick Repointing (Mark RB): All work required for repointing existing brickwork as per Detail 1/A330 and Specification Section 040120.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

S. Unit Price No. 19 – Dimension Stone Repointing (Mark RD): All work required for repointing existing dimension stone as per Detail 1/A330 and Specification Section 040120.

1. Unit of Measurement: Per linear foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

T. Unit Price No. 20 – Rubble Stone Repointing (Mark RR): All work required for repointing existing rubble stone as per Detail 2/A330 and Specification Section 040120.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

U. Unit Price No. 21 – Cast Stone Replacement (Mark RS): All work required for replacing existing cast stone as per Detail 5/A330 and Specification Section 047210.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 -- General Construction Work

V. Unit Price No. 22 – Repair Stone Cracks (Mark SC): All work required for repairing cracks in stone as per Detail 8/A330 and Specification Section 040120.

1. Unit of Measurement: Per linear foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

W. Unit Price No. 23 – Replace Sealant (Mark SR): All work required for replacing sealant as per Detail 7/A330 and Specification Section 040120.

1. Unit of Measurement: Per linear foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1-- General Construction Work

X. Unit Price No. 24: ACT and Grid Replacement: All work required for removal of existing ceiling system and replacement with ACT-1 and grid at ceiling.

1. Unit of Measurement: Per 250 square feet, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work

Y. Unit Price No. 25: New Vinyl Composition Tile Floor Tile: All work required for providing new VCT floor tile including cement underlayment.

1. Unit of Measurement: Per square foot, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work

Z. Unit Price No. 26 - Removal and Disposal of Contaminated Soils: All work required for removal and disposal of contaminated soils.

1. Unit of Measurement: Per cubic yard, measured in place.
2. Base Bid includes amounts as indicated on Drawings.
3. Applicable to Contract 1 - General Construction Work.

AA. Unit Price No. 27 – Clean Backfill: All work required for providing clean backfill.

1. Unit of Measurement: Per cubic yard, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 1 - General Construction Work

BB. Unit Price No. 28 – Dispose of Existing Fuel Oil and Sludge: All work required for disposing of existing fuel oil and sludge.

1. Unit of Measurement: Per gallon, measured in place.
2. Base Bid includes amounts as indicated on Drawings
3. Applicable to Contract 3 - HVAC Work

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate #1 (ADD ALTERNATE) MASONRY FACADE-RELATED WORK: State the amount to be added to the Base Bid for all work related to masonry façade indicated as Alternate work on drawings A311-A313, A330 and general notes on A310.

1. Applicable Contract: Contract 1 - General Construction Work.

B. Alternate #2 (ADD ALTERNATE) ENTRY STAIR STABILIZATION WORK: State the amount to be added to the Base Bid for all work related to performing entry stair stabilization work indicated as Alternate work on drawings A320-A322, A330 and general notes on A310

1. Applicable Contract: Contract 1 - General Construction Work.

C. Alternate #3 (ADD ALTERNATE) ADDITIONAL KITCHEN EQUIPMENT: State the amount to be added to the Base Bid for all work related to providing the following kitchen equipment, indicated on the Drawings as “NIC”. Utilities for the Alternate kitchen equipment are included in the Base Bid.

1. Item 19, Convection Oven, Additional 2nd deck.
2. Item 20, Tilting Skillet Braising Pan
3. Item 35, utility racks (3 total)
4. Item 37, 18” range, 2 burner
5. Item 41, Can rack
6. Item 44, Ice maker and ice bin
7. Applicable Contract: Contract 1 - General Construction Work.

D. Alternate #4 (ADD ALTERNATE) PICNIC AREA: State the amount to be added to the Base Bid for all work required to provide permeable pavers and tables as shown on Civil Drawings (C201, C300, C301 and C500) and specifications,

1. Applicable Contract: Contract 1 - General Construction Work.

E. Alternate #5 (ADD ALTERNATE) SEAT WALL AT K-2 PLAYGROUND: State the amount to be added to the Base Bid for all work to provide the curved stone veneer seat wall as shown on civil drawings (C200, C201, C300, C301).

1. Applicable Contract: Contract No.1 - General Construction Work.

F. Alternate #6 (ADD ALTERNATE) SHADE SAIL STRUCTURE: State the amount to be added to the Base Bid for all work associated with 16’ x 16‘ shade sail structure as shown on Civil Drawings (C200, C201), including all sitework and foundations per specifications.

1. Applicable Contract: Contract No.1 - General Construction Work

G. Alternate #7 (ADD ALTERNATE) INCLUSIVE PLAYGROUND: State the amount to be added to the Base Bid for all work to provide underdrains, poured-in-place surfacing and additional, inclusive playground equipment as noted on the civil drawings and specifications.

1. Applicable Contract: Contract No.1 - General Construction Work

H. Alternate #8 (ADD ALTERNATE) GYMNASIUM WALL PADS: State the amount to be added to the Base Bid for all work to provide the following wall pads:

1. New 6' wall pads on three perimeter walls of gymnasium.
2. New approximate 5' removeable wall pads at stage front.
3. Applicable Contract: Contract No.1 - General Construction Work

I. Alternate #9 (ADD ALTERNATE) ACOUSTIC WALL PANELS AP-1 IN CAFETERIA: State the amount to be added to the Base Bid for all work to provide acoustic wall panels AP-1 in the Cafeteria instead of the wallcovering WC-1 that is included in the Base Bid.

1. Applicable Contract: Contract No.1 - General Construction Work

J. Alternate #10 (ADD ALTERNATE) SOLAR PANELS ON THE ROOF OF THE ADDITION: State the amount to be added to the Base Bid for all work to provide solar panels on the roof of the addition, including electrical work, roofing work, and all connections to the building systems as indicated on Drawings A207, A221, E301, E302, E303, E304 and E500.

1. Applicable Contracts:
    a. Contract No.1 - General Construction Work
    b. Contract No. 4 – Electrical Work

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.
2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and assemblies which deviate from the requirements of the Contract Documents and proposed by Contractor which the Contractor deems will perform the same function and have equal capabilities, service life, economy of operations, and suitability for the intended purpose.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit requests for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use the electronic version of form included as an attachment to this Section; submit in portable document format (.pdf).
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures in .pdf format.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
   a. Forms of Acceptance: Change Order.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days after Notice of Award.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Requested substitution does not require revisions to the Contract Documents.
   c. Substitution request is fully documented and properly submitted.
   d. Requested substitution will not adversely affect Contractor's construction schedule.
   e. Requested substitution has received necessary approvals of authorities having jurisdiction.
   f. Requested substitution is compatible with other portions of the Work.
   g. Requested substitution has been coordinated with other portions of the Work.
   h. Requested substitution provides specified or superior warranty.
   i. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule; or if requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
   j. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
   k. Maintenance service and source of replacement parts, as applicable, is available similar to the specified product.
   l. Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
   m. Proposed substitution does not affect dimensions and functional clearances.
   n. Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 15 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied,

Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require revisions to the Contract Documents or, if revisions are required, the Contractor acknowledges that the cost of the Architect’s redesign fee will be deducted from the Contract Price.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified or superior warranty.
j. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule; or if requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
k. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
l. Maintenance service and source of replacement parts, as applicable, is available similar to the specified product.
m. Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
n. Proposed substitution does not affect dimensions and functional clearances.
o. Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

ATTACHMENT: SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST FORM

To: _____

_____
_____
_____

Project: _____

Section	Page	Paragraph	Specified Item

THE UNDERSIGNED REQUESTS CONSIDERATION OF THE FOLLOWING SUBSTITUTION:

Attached data shall include, in a tabular format to provide a line by line comparison - product description, specifications, drawings, photographs, performance and laboratory tests and the like with applicable portions of said data clearly identified.

FURTHER, The Proposed Substitution WILL (OR WILL NOT) Affect:

Dimensions indicated on the drawings?_____
Wiring, piping, ductwork, or other building services indicated on the drawings?_____
Other trades and abutting or interconnection work? _____
Manufacturer's guarantees and warranties? _____
The construction schedule? _____
Maintenance and service parts locally available? _____

(NOTE - If Substitution WILL affect any item above, explain in detail.)

In addition to the above, the undersigned agrees to pay for -

1. Any and all changes to the building design, including structural, civil or electro/mechanical systems engineering (if any), detailing; and
2. Any and all additional construction costs caused by the requested substitution.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

SUBMITTED:	DESIGN PROFESSIONAL'S COMMENTS	
By:	Accepted	Accepted as Noted
Firm:	Not Accepted	Received Too Late
Address:		
		By:
Date:		Date:
Telephone/Fax:		Remarks:
Approved For Subcontractor Submittal:		
By:	Contractor:	Date:

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.4 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
   a. Application for Payment forms with continuation sheets.
   b. Submittal schedule.
   c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect and Construction Manager within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Name of Architect.
   c. Name of Construction Manager
   d. Architect's project number.
   e. SED number
   f. Contractor's name and address.
   g. Date of submittal.

2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
   a. Related specification section or division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that reflect value.
   g. Dollar value as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum. No line item should exceed 10% of the contract sum.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

9. Include a line item for each of the following in the specified percentage of the Contract Sum:
   a. Submittals and Shop Drawings: 1%
   b. Meetings and Documentation: 2%
   c. O&M and Closeout: 3%
   d. Punch List: 1%

10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when fully executed Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
2. Each Application for Payment after the Initial Application for Payment shall include lien wavers for amounts paid with respect to the immediately preceding Application for Payment.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect and Construction Manager.

C. Application for Payment Forms: Use AIA Document G732 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Separately account for each different SED project number in all payment applications. Each building shall be accounted for separately.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:
   a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.

b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Payrolls and Payroll Records:

1. In accordance with Article 8, Section 220 of the New York State Labor Law, every contractor and subcontractor must keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three years from the project's date of completion. At a minimum, payrolls must show the following information for each person employed on a public work project:
   a. Name
   b. Classification(s) in which the worker was employed
   c. Hourly wage rate(s) paid
   d. Supplements paid or provided
   e. Daily and weekly number of hours worked in each classification.

2. Every contractor and subcontractor shall submit, within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
   a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

5. Waiver Forms: Submit partial and final waivers of lien on form included at the end of this Section, executed in a manner acceptable to Owner.

H. Attachments to Applications for Payment: In addition to other requirements stated in the Contract Documents, include with each Application for Payment fully executed Partial Release and Waiver of Liens and/or Final Waiver of Liens Form as applicable, and Payroll Certification on the forms included at the end of this Section. In addition, provide a current copy of the approved Contractor’s Construction Schedule, signed by all Prime Contractors, indicating agreement to the schedule.

I. Transmittal: Submit two signed and notarized original copies of each Application for Payment to the Construction Manager by a method ensuring receipt within 24 hours. Both copies shall include waivers of lien, payroll certification forms and all other required attachments.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

J. Initial Application for Payment: Administrative actions and submittals (that have been previously approved) that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule.
4. Products list.
5. Submittal schedule.
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.
13. Performance and payment bonds.
14. Data needed to acquire Owner's insurance.
15. Initial settlement survey and damage report if required

K. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

L. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.

8. Final Waiver of Liens Form
9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

Attachments: Partial Waiver of Liens Form
Final Waiver of Liens Form
Payroll Certification Form

REQUISITION FOR PARTIAL PAYMENT - WAIVER OF LIENS

PROJECT	**OWNER**
GENERAL CONTRACTOR	**SUBCONTRACTOR/VENDOR**
CONTRACT	**WORK COMPLETE**
PROJECT:	CONTRACT - $
TRADE:	CHANGE ORDERS - $
CONTRACT - $	TOTAL COMPLETE - $
CHANGE ORDERS - $	RETAINAGE (___%) - $
TOTAL CONTRACT - $	LESS PRE. REQ. - $
	THIS REQUISITION - $

Waiver of Lien

The undersigned, upon receipt of the above requisition payment hereby releases and discharges the Owner of and from any liability or obligation in any way related to or arising out of this project up to and including the date of this document.

The undersigned further covenants and agrees that it shall not in any way claim or file a mechanic's or other lien against the premises of the above designated project, or any part thereof, or against any fund applicable thereto for any of the work, labor, materials heretofore furnished by it in connection with the improvement of said premises.

The undersigned further warrants that, in order to induce the Owner to release this partial payment, they have paid all claims for labor, material, insurance, taxes, equipment, etc., employed in the prosecution of the work above, to date of this requisition.

The undersigned hereby releases and agrees to hold the Owner harmless from any and all claims in connection with the furnishing of such labor and materials, etc., for the construction of the aforementioned project.

The undersigned further guarantees that all portions of the work furnished and/or provided by them are in accordance with the contract and that the terms of the contract with respect to these guarantees will hold for the period specified in said contract.

IN WITNESS WHEREOF, we have executed under seal this release on the date below and to be legally bound hereby:

WITNESS: _____ FIRM: _____

BY: _____ DATE: _____

CORPORATE ACKNOWLEDGEMENT

State of
)SS.
)
County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ _____; that he is the officer of the said corporation executing the foregoing instrument, that he knows the seal of said corporation, that the seal affixed to said instrument is such corporate seal, that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

_____
Notary Public

INDIVIDUAL ACKNOWLEDGEMENT

State of
)SS.
)
County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ _____ that he is the individual who executed the foregoing instrument.

_____
Notary Public

PARTNERSHIP ACKNOWLEDGEMENT

State of
)SS.
)
County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ _____; that he is the partner in the firm of _____ doing business under the name of _____ and that he executed the foregoing instrument on behalf of said partnership.

_____
Notary Public

Print Form

CONTRACTOR/VENDOR FINAL RELEASE AND LIEN WAIVER

The undersigned represents and warrants that it has been paid and has received (or that it will be paid and will receive via proceeds from this pay application) $_____ as full and final settlement under the contract/agreement dated _____ (including any amendments or modifications thereto) (the "**Contract**") between the undersigned and _____ ("**Contractor/Vendor**") for the _____ Project owned by _____ ("**Owner**") (PO Number: _____). In consideration for this final payment, and other good and valuable consideration, receipt of which is acknowledged, the undersigned makes the following representations and warranties:

1. The undersigned and Owner have fully settled all terms and conditions of the Contract (including any amendments or modifications thereto), as well as any other written or oral commitments, agreements, and/or understandings in connection with the Project.
2. The undersigned has been paid in full (or it will be paid in full via proceeds from this pay application) for the labor, services, and materials in connection with the Contract, including all work performed or any materials provided by its subcontractors, vendors, suppliers, materialmen, laborers, or other persons or entities.
3. The undersigned has paid in full (or it will pay in full via proceeds from this pay application) all its subcontractors, vendors, suppliers, materialmen, laborers, and other person or entity providing services, labor, or materials to the Project; there are no outstanding claims, demands, or rights to liens against the undersigned, the Project, or the Owner in connection with the Contract on the part of any person or entity; and no claims, demands, or liens have been filed against the undersigned, the Project, or the Owner relating to the Contract.
4. The undersigned releases and discharges Owner from all claims, demands, or causes of action (including all lien claims and rights) that the undersigned has, or might have, under any present or future law, against Owner in connection with the Contract. The undersigned hereby specifically waives and releases any lien or claim or right to lien in connection with the Contract against Owner, Owner's property, and the Project, and also specifically waives, to the extent allowed by law, all liens, claims, or rights of lien in connection with the Contract by the undersigned's subcontractors, materialmen, laborers, and all other persons or entities furnishing services, labor, or materials in connection with the Contract.
5. The undersigned shall indemnify, defend, and hold harmless Owner from any action, proceeding, arbitration, claim, demand, lien, or right to lien relating to the Contract, and shall pay any costs, expenses, and/or attorneys' fees incurred by Owner in connection therewith.

The undersigned makes the foregoing representations and warranties with full knowledge that Owner shall be entitled to rely upon the truth and accuracy thereof.

DATED: _____

_____
(Contractor/Vendor company name)
By: _____
Title: _____

STATE OF_____
COUNTY OF _____

I, a Notary Public for the above County and State, certify that _____ personally came before me this day and acknowledged that he/she is _____ [title] of _____ [company name], and that he/she, as _____ [title], being authorized to do so, executed the foregoing on behalf of _____ [company name]. Witness my hand and official seal this ____ day of _____, 20___.

_____
Notary Public

My Commission Expires: _____

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID.

PAYROLL CERTIFICATION

_____ am an officer with the title of _____

in the firm of _____ and am authorized by that firm to sign and swear, under penalty of perjury, to the validity and accuracy of the statements below.

(1) I pay or supervise the payment of laborers, workers and mechanics employed by _____ _____ on the _____ project. During the payroll period commencing on the _____ day of _____ 20___ and ending the _____ day of _____ 20_____ all laborers, workers and mechanics employed on said project were paid the wages and supplements recorded as earned on the attached payroll records. No deductions have been made either directly or indirectly from the wages and supplements other than deductions shown on the payroll records.

(2) The payroll records submitted for the above project and attached hereto are correct and complete, and the wage rates for laborers, workers, and mechanics contained therein are not less than the applicable wage rates stated in the Contract and as designated by the State Labor Department. The number of hours shown for each employee reflects the actual hours worked by that employee. The classification shown for each employee is accurate and conforms with the work he or she performed.

(3) Supplements required in the Contract that are in addition to the basic hourly wages have been or will be paid to the appropriate plans, funds or programs.

(4) Such statement so to be filed shall be verified by the oath of the Contractor that he or she has read such statement subscribed by him or her and knows the content thereof, and that the same is true of his or her own knowledge except with respect to wages and supplements owing by subcontractors which may be certified upon information and belief.

(5) All employees of this firm have submitted completed Form I-9, Employment Eligibility Verification Form which has been reviewed and signed by authorized representatives of the firm and are kept in the employees' file. Also, any and all subcontractors have certified to us that all of their employees have submitted completed Form I-9 Employment Eligibility Verification Form, which have been reviewed and signed by authorized representatives of the firm and are kept in the employees' file.

By: _____

Title: _____

Date: _____

Firm Name _____

Firm Address _____

Prime

Subcontractor

NOTARY

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Requests for Information (RFIs).
3. Project Information Management (PIM) software.
4. Project meetings.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.2 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

B. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Submit list of subcontractors within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone

numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination, Multiple Prime Contracts: Each Contractor shall coordinate its construction operations with those of other Contractors and entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

F. Use of the Site: The Construction Manager will administer allocation of available space equitably among separate Prime Contractors and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. Each Contractor shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. Requests for Information (RFI's) are requests for clarifications or questions regarding the contract drawings and specifications, not contract terms, scheduling items, or general correspondence, nor, are they to be as a means to describe or request approval of alternate construction means, methods or concepts or substitution for materials, systems means and methods.

1. Carefully study and compare the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, and prior Project correspondence and documentation prior to submitting a Request for Information.

B. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

C. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect and Construction Manager
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

D. RFI Forms: Architect will furnish electronic version of form bound in Project Manual.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. Based upon the amount of RFI's received and their level of content, the Architect will establish the level of importance of each RFI and allow sufficient time in the Architect's professional judgment to permit adequate review.
2. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

3. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
4. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit a change proposal according to the General Conditions of the Contract

    a. If the Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 15 calendar days of receipt of the RFI response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly; include the following: .

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect and Construction Manager.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.

7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

G. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.6 PROJECT INFORMATION MANAGEMENT (PIM) SITE

A. Use the Project Information Management (PIM) software transmission server software for purposes of hosting and managing project communication and documentation until Final Completion. Project Information Management (PIM) software site includes the following functions:

1. Project directory.
2. Project correspondence.
3. Meeting minutes.
4. Contract modifications forms and logs.
5. RFI forms and logs.
6. Task and issue management.
7. Photo documentation.
8. Schedule and calendar management.
9. Submittals forms and logs.
10. Payment application forms.
11. Drawing and specification document hosting, viewing, and updating.
12. Online document collaboration.
13. Reminder and tracking functions.
14. Archiving functions.

B. Owner will provide Project Information Management (PIM) software user licenses for use of the Architect, Contractor, Construction Manager, and Architect's consultants.

C. The project will utilize Submittal Exchange Project Information Management (PIM) software to track submittals and RFI’s.

D. Post electronic submittals as PDF electronic files directly to the Submittal Exchange server, specifically established for Project.

1.7 PROJECT MEETINGS

A. General: The Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Construction Manager will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Construction Manager will notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Construction Manager will prepare the meeting agenda and distribute the agenda to all invited attendees.

3. Minutes: Construction Manager will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Owner, and Architect, within three days of the meeting.

B. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 14 days after Notice to Proceed.

a. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

b. Agenda: Discuss items of significance that could affect progress, including the following:

1) Tentative construction schedule.
2) Phasing.
3) Critical work sequencing.
4) Designation of responsible personnel.
5) Procedures for processing field decisions and Change Orders.
6) Procedures for processing Applications for Payment.
7) Distribution of the Contract Documents.
8) Submittal procedures.
9) Preparation of Record Documents Procedures for RFIs.
10) Use of the premises and existing building.
11) Work restrictions.
12) Working hours.
13) Owner's occupancy requirements.
14) Procedures for moisture and mold control.
15) Procedures for disruptions and shutdowns.
16) Construction waste management and recycling.
17) Parking availability.
18) Office, work, and storage areas.
19) Equipment deliveries and priorities.
20) First aid.
21) Progress cleaning.
22) Responsibility for temporary facilities and controls.
23) Security
24) Waste management protocols.

c. Contractor shall submit the following items at this meeting:
1) Preliminary Contractor's Construction Schedule (if schedule has not yet been submitted).
2) List of Subcontractors.
3) Schedule of Values.
4) Submittal Schedule.
5) Products List (Proposed products and manufacturers including any substitution products proposed).

2. Minutes: Construction Manager will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Construction Manager of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

    a. Contract Documents.
    b. Options.
    c. Related RFIs.
    d. Related Change Orders.
    e. Purchases.
    f. Deliveries.
    g. Submittals.
    h. Review of mockups.
    i. Possible conflicts.
    j. Compatibility requirements.
    k. Time schedules.
    l. Weather limitations.
    m. Manufacturer's written instructions.
    n. Warranty requirements.
    o. Compatibility of materials.
    p. Acceptability of substrates.
    q. Temporary facilities and controls.
    r. Space and access limitations.
    s. Regulations of authorities having jurisdiction.
    t. Testing and inspecting requirements.
    u. Installation procedures.
    v. Coordination with other work.
    w. Required performance results.
    x. Protection of adjacent work.
    y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Contractor, Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Construction Manager will conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

    a. Preparation of record documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Submittal of written warranties.
    d. Requirements for preparing operations and maintenance data.
    e. Requirements for delivery of material samples, attic stock, and spare parts.
    f. Requirements for demonstration and training.
    g. Preparation of Contractor's punch list.
    h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    i. Submittal procedures.
    j. Coordination of separate contracts.
    k. Owner's partial occupancy requirements.
    l. Installation of Owner's furniture, fixtures, and equipment.
    m. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Construction Manager will conduct progress meetings at bi-weekly or twice monthly intervals.

1. Coordinate preparation of payment requests with dates of meetings.
2. Attendees: In addition to representatives of Owner, Contractor and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
    a. A representative of Contractor shall be present at every progress meeting, regardless of whether or not that Contractor is performing work at the site at the time.
    b. Any decision reached at a job meeting shall be binding on a Contractor, whether or not he or his representative is present at such job meeting.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period (2-week look ahead schedule)

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Progress cleaning.
10) Quality and work standards.
11) Status of correction of deficient items.
12) Field observations.
13) Status of RFIs.
14) Status of proposal requests.
15) Pending changes.
16) Status of Construction Change Directives.
17) Status of Change Orders.
18) Pending claims and disputes.
19) Documentation of information for payment requests.
20) Waste management.

4. Minutes: Construction Manager will record and distribute the meeting minutes to each party present, to others affected by decisions or actions resulting from each meeting and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting

F. Coordination Meetings: Construction Manager will conduct Project coordination meetings at bi-weekly intervals or as required by the Construction Manager. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Construction Manager, each contractor, subcontractor, supplier, and other entity concerned with current

progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work

2. Agenda: Coordinate work for the ensuing two weeks. Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. At the close of the meeting, each prime Contractor shall, in an agreed format, provide a summarized two week work plan to the Construction Manager.

3. Any decision reached at a job meeting shall be binding on a Contractor, whether or not they or their representative is present at such job meeting
4. Reporting: Construction Manager will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

ATTACHMENT:

REQUEST FOR INFORMATION FORM

REQUEST FOR INFORMATION (RFI FORMAT)

<table>
<tr><td colspan="2">Contractor:</td><td colspan="2">Architect: KG&D Architects, PC</td></tr>
<tr><td colspan="2">Address:</td><td colspan="2">Address: 285 Main Street, Mt. Kisco, NY 10549</td></tr>
<tr><td colspan="2">Telephone:</td><td colspan="2">Telephone: 914-666-5900</td></tr>
<tr><td colspan="2">Fax:</td><td colspan="2">Fax: 914-666-0051</td></tr>
<tr><td colspan="2">Email:</td><td colspan="2">Email: sdavis@kgdarchitects.com</td></tr>
<tr><td colspan="2">Project Name:</td><td colspan="2">Project Location:</td></tr>
<tr><td>RFI Number:</td><td>Date of Request:</td><td colspan="2">Requested Date of Response (5 business days minimum):</td></tr>
<tr><td colspan="4">Description, complete with backup data as necessary attached hereto:</td></tr>
<tr><td>Sketches of Conditions</td><td colspan="2">Specification Paragraph Reference(s):</td><td>Drawing Reference(s):</td></tr>
<tr><td colspan="4">Proposed Solution:</td></tr>
<tr><td colspan="2">Cost Impact:</td><td colspan="2">Time Impact:</td></tr>
<tr><td colspan="4">Trade/Specialty Contractors Affected:</td></tr>
<tr><td colspan="4">Trade/Specialty Contractors Coordinated With:</td></tr>
<tr><td colspan="4">Submitted By:</td></tr>
<tr><td colspan="4">Architect's Response:</td></tr>
<tr><td colspan="2">By:</td><td colspan="2">Date of Response:</td></tr>
</table>

SECTION 013115 – COORDINATION DRAWINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes preparation of coordination drawings for architectural, structural, mechanical, plumbing, fire protection, fire alarm, lighting, information technology, security, and electrical Work.

B. Related Sections include the following:

1. Division 21, 22, 23, 26, 27 and 28 for additional requirements.

1.2 DEFINITION AND INTENT

A. The Contract Drawings are diagrammatic only and are not intended to show the alignment, exact physical locations, or configurations of such Work. Performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. Where possible, the Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing coordination drawings.

B. Coordination drawings are drawings prepared by Contractor that superimpose Work of multiple trades involved in the construction process. Coordination drawings indicate systems and components to be installed by the Contractor to maximize clear height and free area in ceiling cavities, allow for proper and adequate equipment service clearances, minimize space required by shafts and chases and provide the most efficient functioning and use of materials possible while complying with the final performance and finished appearance required by the Contract Documents.

C. Coordination drawings are intended to show the relationship and integration of different construction elements that require coordination during fabrication or installation to fit in the space provided, to function as intended, and to present the intended final finished appearance.

D. Coordination Drawings are not a replacement for shop drawings specified in the technical specifications or the Record Drawings required in Division 01.

E. The Contractor shall manage the process so that each trade/ sub contractor provides all required information in a timely manner. Coordination Drawings may be completed on a phased basis so as not to delay the overall project schedule. The CPM Schedule specified elsewhere in Division 01 Section “Construction Progress Documentation” shall include the submission of Coordination Drawings. The same shall demonstrate how the Contractor intends to integrate the submission of Coordination Drawings to suit the overall project schedule. The Contractor shall pay all costs for reproducing copies of coordination drawings for use in the field.

F. Contractor shall maintain equipment access and pathways as indicated on the Drawings. Floor space in MEP equipment rooms shall be maintained as indicated on the Architectural Drawings. Contractor shall clearly indicate access and floor space to be maintained in coordinated shop drawings submitted to the Owner and Architect as per the Specifications.

G. Fully coordinated Ceiling Coordination Drawings must be received and approved by the Architect before any associated ceiling shop drawings of any trade will be reviewed.

H. Sprinkler heads depicted on architectural drawings are intended to indicate design intent of layout only.

1.3 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. Refer to Division 01 Section “Submittal Procedures” for availability of and use of Architect’s CAD Background Drawings.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare and submit as informational submittal within 15 days of Notice to Proceed.

B. Submit coordination drawings in the same manner as shop drawings; refer to Section 013300 Submittal Procedures.

1.5 PROJECT CONDITIONS

A. Maintain marked up set of coordination drawings at Project site available for reference by Owner, Construction Manager and Architect.

B. Maintain original CAD drawings or base drawings used to produce coordination drawings updated with revisions to reflect actual construction. Make drawing revisions at time of change to construction; Transfer information to CAD drawings no later than every 7 days.

C. Failure to submit coordination drawings will result in no changes to contract sum for necessary corrections to uncoordinated work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION OF COORDINATION DRAWINGS, GENERAL

A. Prepare coordination drawings for Project using CAD drawings or similar coordination documentation overlay drawings indicating coordination of the project.

B. CAD Drawings: Produce coordination drawings and overlays using Architect's electronic base drawings furnished by the Architect.

1. Each Prime Contractor shall be assigned a layer to create the detailing work of each section or division of the Specifications requiring coordination. Each Prime Contractor shall ensure that the layer assigned to them cannot be modified by another Contractor or trade, and that the final product clearly differentiates which Contractor or trade is responsible for the respective information shown. The latter may occur through the use of colors or other distinct graphic methods.

C. The Construction Manager will assume overall coordination responsibilities for the preparation of the coordination drawings, and shall work in collaboration with each Prime Contractor to coordinate work by more than one contract.

1. The Construction Manager will coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components.

3.2 INFORMATION REQUIRED IN COORDINATION DRAWINGS

A. Architectural Work Information Required in Coordination Drawings:

1. Items which are recessed into ceilings and ceiling plenums, or surface mounted to ceilings.
2. Anchorages, fastenings, and supporting for items recessed in, attached to, or suspended from ceilings or structure above ceilings.
3. Firewalls, Fire Barrier, Fire partitions and smoke partitions on coordination drawings for coordination of life safety requirements.

B. Plumbing Work Information Required in Coordination Drawings:

1. Sizes and bottom elevations of piping with insulation thickness included.
2. Dimensions of major components, such valves, access doors and cleanouts.
3. Fire-rated enclosures around piping
4. Support of all roof mounted plumbing piping and equipment.
5. Required space to install, service and maintain all plumbing mechanical items and systems.

C. HVAC Work Information Required in Coordination Drawings:

1. Sizes and bottom elevations of ductwork, piping with insulation thickness included.
2. Fire dampers.
3. Acoustical lining in ductwork.
4. Identification of ductwork pressure class.
5. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
6. Fire-rated enclosures around ductwork.
7. Support of all roof mounted HVAC piping and equipment.

8. Required space to install, service and maintain all HVAC items and systems.

D. Electrical Work Information Required in Coordination Drawings:

1. Electrical Work, including telecommunications, data, security, lighting and fire alarm systems.
2. Runs of vertical and horizontal conduit 1-1/4-inch diameter and larger.
3. Light fixture locations.
4. Emergency egress light locations.
5. Smoke detector, and other fire alarm device locations.
6. Panelboard, switchboard, transformer, cable tray, and motor control center, and exit signs.
7. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Bottom elevation of all conduit runs 1-1/4 -inch diameter and larger and of all cable trays.
9. Support of all roof mounted conduit and photovoltaic equipment, cameras, and security system devices.
10. Required space to install, service and maintain all electrical items and systems.
11. Lightning protection.

E. Fire Protection System Information Required in Coordination Drawings:

1. Locations of standpipes, valves, mains piping, branch lines, pipe drops, and sprinkler heads.
2. Bottom elevation of main and branch lines.

F. Structural Work Information Required in Coordination Drawings:

1. Ceiling system.
2. Openings and sleeve locations required in slabs, walls, beams and other structural elements, including required openings not indicated on Contract Documents.
3. Slab edge locations and locations of sleeves dimensioned from building lines and floor lines.

G. Ceiling Systems and Plenum Space in Coordination Drawings:

1. For mechanical, plumbing, fire protection, fire alarm, electrical, controls, and telecommunications Work penetrating acoustical ceilings, show locations of each item (including sprinkler heads, diffusers, grilles, access doors, light fixtures, smoke detectors, exit signs, speakers, and other visible ceiling mounted devices) relative to acoustical ceiling grid or to wall in gypsum board ceilings.
2. Locate components within ceiling plenums to maximize clear area for future installations of lights and equipment.
3. Clearly indicate areas of conflict between light fixtures, diffusers and grilles and plenum boxes and other components on coordination drawings.
4. Draw elements to dimensions appropriate for products to be installed. Use of symbols is not acceptable.

3.3 CONFLICTS IN COORDINATION DRAWINGS

A. The Construction Manager will review the Coordination Drawings to identify areas of conflicts and obstacles, and together with the separate Prime Contractors, work to resolve the trade conflicts as well as clashes within each trade, until all conflicts are fully coordinated.

1. Each Prime Contractors shall revise their respective portions of the Coordination Drawings to eliminate the collisions and interferences identified.
2. Each Prime Contractor shall determine that all work can be installed without interference.
3. Each Prime Contractor shall approve the revised Coordination Drawings in writing indicating approval of installation coordination and clearances.

B. In the case of unresolved interference, the Construction Manager will notify the Architect. The Architect will then suggest to the Construction Manager as to how to revise the Coordination Drawings to eliminate interference. The Prime Contractors shall then revise their respective Drawings to eliminate the interference.

1. Each Prime Contractor shall approve the revised Coordination Drawings in writing indicating approval of installation coordination and clearances.

3.4 PREPARATION OF COORDINATION DRAWINGS

A. Organize coordination drawing submittals as follows:

1. Floor Plans: Provide floor plans and reflected ceiling plans for all floors. Show architectural, structural, mechanical, plumbing, fire protection, fire alarm, electrical, and telecommunications elements on floor plans and reflected ceiling plans.
2. Equipment Rooms and Spaces: Provide large scale drawings for equipment rooms and spaces showing plans and elevations of mechanical, plumbing, fire protection, electrical, and telecommunications equipment.
3. Structural Penetrations: Provide coordination drawings for each floor indicating penetrations and openings required for all trades.
4. In public and occupied areas without scheduled finish ceilings, appearance is a major coordination factor. Reposition proposed locations of work after Coordination Drawing review by the Architect. Provide adjustments to the exact size, location and offsets of ducts, pipes, and conduit to achieve reasonable appearance objectives. Provide these adjustments as part of the Contract or notify the Architect immediately as to why the adjustment cannot be made.

B. Prepare coordination drawings to a scale of 1/4" = 1'- 0" or larger (1/2"= 1'-0" for mechanical room plans); detailing major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:

1. Detail complex areas at larger scale than typical floor plans.

2. Use a common architectural layout as background.
3. Indicate ductwork, pipes with 6-inch diameter and greater, and conduits with 3-inch diameter and greater by double lines. Use single lines for smaller mechanical piping and all electrical conduits. Draw piping, ductwork, lighting fixtures, and cable trays in scale.
4. Circle and clearly note deviations from Contract Documents with reason for deviation stated.
5. Provide name of representative of each subcontractor whose Work is indicated on coordination drawings, verifying their review and approval that their Work has been coordinated with each other trade and with architectural and structural Work.

END OF SECTION 013115

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's construction schedule.
3. Construction Manager’s construction schedule.
4. Project construction schedule
5. Construction schedule updating reports.
6. Daily construction reports.
7. Site condition reports.
8. Special reports.
9. Preparation of two week look-ahead schedule.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Milestone: A key or critical point in time for reference or measurement.

G. Contractor's Construction Schedule: A construction schedule for the Work of a Prime Contractor, prepared by that Prime Contractor.

H. Construction Manager's Construction Schedule: A construction schedule for the Project, prepared by the Construction Manager with no input from Prime Contractors, indicating milestones, Phasing, and other general requirements for the prosecution of the Work of all Contracts.

I. Project Construction Schedule: A coordinated construction schedule for the Project, prepared and maintained by the Construction Manager, indicating an overall construction schedule for the entire Project with input from all Prime Contractors, coordinated by the Construction Manager, and accepted by all Prime Contractors.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.

B. Startup construction schedule.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals
2. Construction Manager will review schedule for compliance with Construction Manager's Construction Schedule

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at monthly intervals.

G. Site Condition Reports: Submit at time of discovery of differing conditions.

H. Special Reports: Submit at time of unusual event.

I. Qualification Data: For scheduling personnel.

1.4 QUALITY ASSURANCE

A. Scheduling Personnel Qualifications: A consultant or a person in the Contractor's employ who is experienced in CPM project scheduling and reporting, with capability of reviewing Construction Manager's Construction Schedule and Project Construction Schedule, correlating them with Contractor's Construction Schedule, and providing feedback reports within time schedule specified.

B. Prescheduling Conference: After receipt of preliminary Contractor's Construction Schedule from all Prime Contractors, Construction Manager will conduct a schedule review and coordination conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Construction Manager will review methods and procedures related to the Project Construction Schedule including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Review submittal requirements and procedures.
4. Discuss constraints, including phasing, area separations, interim milestones and partial Owner occupancy.
5. Review delivery dates for Owner-furnished products.
6. Review schedule for work of Owner's separate contracts
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for completion and startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.
12. Discuss constraints, including phasing work

1.5 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. The form of the Contractor's Construction Schedule will be a CPM schedule.

B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

C. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

D. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

E. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.
b. Limitations of continued occupancies.
c. Uninterruptible services.
d. Partial occupancy before Substantial Completion.
e. Use-of-premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

a. Subcontract awards.
b. Submittals.
c. Purchases.
d. Mockups.
e. Fabrication.
f. Sample testing.
g. Deliveries.
h. Installation.
i. Tests and inspections.
j. Adjusting.
k. Curing.
l. Startup and placement into final use and operation.

G. Milestones: Include milestones indicated in the Contract Documents and in the Construction Manager's Construction Schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the interim milestones indicated on the Schedule.

H. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

I. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.
4. In no event shall any progress report constitute an adjustment in the Contract Time, any Milestone Date or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to Change Order.

J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

K. Distribution: Distribute copies of approved schedule to Architect**,** Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.7 PROJECT CONSTRUCTION SCHEDULE

A. Form: The form of the Project Construction Schedule will be a CPM schedule.

B. Responsibilities: The Construction Manager will provide services as the overall project scheduling coordinator for Project planning, scheduling and control. The Construction Manager will prepare and maintain the overall Project Construction Schedule with input from the Prime Contractors.

C. Preparation: The procedure for the preparation of the Project Construction Schedule shall be as follows:

1. Within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first, each Prime Contractor shall prepare and submit to the Construction Manager, for review and coordination, a detailed start up Contractor’s Construction Schedule for his Work showing the details of his compliance with the Construction Manager’s Construction Schedule. Contractor’s Construction Schedule shall indicate that the Phases of the Project be Substantially Complete by the dates indicated in the Construction Manager’s Construction Schedule.
2. The Construction Manager will review the Contractor’s Construction Schedule and shall advise the Contractor if its schedule is acceptable for incorporation into the Project Construction Schedule, or if revisions will have to be made.
3. Each Prime Contractor shall cooperate with each other and with the Construction Manager in coordinating each Contractor’s Construction Schedule to produce the Project Construction Schedule.
4. When the coordinated Project Construction Schedule is produced by the Construction Manager, each Prime Contractor shall signify acceptance of Schedule by signing the schedule.

D. Updates/Revisions: The Construction Manager will update the Project Construction Schedule at bi-weekly intervals to reflect actual construction progress and activities, based on feedback reports of Prime Contractors. Each Prime Contractor shall issue revised scheduling report (update) to the Construction Manager one week before each regularly scheduled progress meeting.

1. Construction Manager will revise Project Construction Schedule immediately after each meeting or other activity where revisions have been recognized or made. Construction Manager will issue updated schedule concurrently with the report of each such meeting.
2. As the Work progresses, Project Construction Schedule will indicate Actual Completion percentage for each activity.
3. The Contractor shall monitor the progress of its work for conformance with the requirements of the construction schedule and shall promptly advise the Construction Manager of any delays or potential delays.
4. If a schedule update is not submitted by the Contractor in a timely fashion, the Contractor shall accept the Project Construction Schedule prepared by the Construction Manager as the construction schedule to be used in carrying out its work and the Contractor waives its rights to claim damage or delay associated with the time requirements set forth in the updated Project Construction Schedule.
5. The Owner reserves the right to adjust the Project Construction Schedule from time to time during construction to mitigate unavoidable problems and ensure that the Project Completion Date is achieved. Contractor shall comply with the adjusted Project Construction Schedule without additional cost.
6. When an updated Project Construction Schedule is produced by the Construction Manager, each Prime Contractor shall signify acceptance of Schedule by signing the schedule.

E. Distribution: Construction Manager will distribute copies of approved schedule to Prime Contractors, Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Construction Manager with a need-to-know schedule responsibility.

1. Construction Manager will post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, Construction Manager will distribute updated schedules to the same parties and post in the same locations. Parties will be deleted from distribution list when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

F. Prime Contractors' Acceptance of Project Construction Schedule: The initial and each updated Project Construction Schedule shall be signed by each Prime Contractor, indicating acceptance of such schedule.

1. A copy of the initial Project Construction Schedule signed and accepted by Prime Contractor shall be attached to the initial Application for Payment. No payment will be processed by the Owner until such document has been received.

2. A copy of the most current Project Construction Schedule signed and accepted by Prime Contractor shall be attached to each succeeding Application for Payment. No payment will be processed by the Owner until such document has been received.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within 10 days after Notice of Award of Contract or at the preconstruction meeting, whichever comes first.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 CPM SCHEDULE REQUIREMENTS

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice of Award. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice of Award.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Preparation and processing of coordination drawings.
    c. Mobilization and demobilization.
    d. Purchase of materials.
    e. Delivery.
    f. Fabrication.
    g. Utility interruptions.
    h. Installation.
    i. Work by Owner that may affect or be affected by Contractor's activities.
    j. Testing and commissioning.
    k. Punch list and final completion.
    l. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
   a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
   b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.10 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.

19. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions.

1.11 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

END OF SECTION 013200

SECTION 013233 – PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for the following work by the Contractor:

1. Preconstruction photographs.
2. Preconstruction videos.

1.2 SUBMITTALS

A. Key Plan: Submit key plan of Project site and buildings with notation of vantage points marked for location and direction of each photograph and video. Indicate elevation or story of construction. Include same label information as corresponding set of photographs or video.

B. Photographs: Submit two prints of each photographic view

1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper, enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.
2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:

a. Name of project.
b. Name of Architect and Construction Manager
c. Name of Contractor.
d. Date photograph was taken if not date stamped by camera.
e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
f. Unique sequential identifier.

3. Digital Images: Submit a complete set of digital image electronic files with each submittal of prints as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

C. DVD's: Submit 2 copies of each DVD with protective sleeve or case within seven days of recording.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name of Architect and Construction Manager.
c. Name of Contractor.

d. Date video was recorded.
e. Description of vantage point, indicating location, direction (by encompass point), and elevation or story of construction.
f. Weather conditions at time of recording.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches

B. Digital Images: Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1600 by 1200 pixels.

C. Digital Video Recordings: Provide high-resolution, digital video disc in format acceptable to the Owner.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of photographs that identifies each photographic location.

B. Film Images:

1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
2. Field Office Prints: Retain one set of prints of photographs in the field office at Project site, available at all times for reference.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.
2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference.

D. Preconstruction Photographs: Before commencement of demolition, or starting construction, take color and digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Take 20 photographs of each existing building to accurately record physical conditions at start of demolition or construction.
2. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

3.2 CONSTRUCTION DIGITAL VIDEO

A. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

B. Narration: Describe scenes on video by audio narration by microphone while video is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.
2. Begin each video with name of Project, Contractor's name, videographer's name, and Project location.

C. Preconstruction Video: Before starting demolition or construction record video of Project site and surrounding properties from different vantage points.

1. Show existing conditions adjacent to Project site before starting the Work.
2. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition, or construction.
3. Show protection efforts by Contractor.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:
1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
5. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

2. All submittals shall be submitted to Architect and Construction Manager within 25 days of contract signing.
3. Allow sufficient processing time; as a minimum, as indicated in this Section.
4. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include all submittals for the project in the initial submittal schedule.
5. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
6. Format: Arrange the following information in a tabular format:
    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

B. Architect will review Submittal Schedule for concentrations, overloading and similar conflicts which will impact the Architect’s ability to meet the schedule and propose revisions to the duration of processing time to the Contractor.

C. No payment will be made to Contractor until complete Schedule of Submittals has been received and accepted by Owner and Architect.

D. The Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals if the Contractor fails to submit a Submittal Schedule.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files:
1. Any request for digital data files shall be solely and exclusively for use related to this Project.
2. CAD Background Drawings: Electronic copies of CAD Background Drawings of the Contract Documents in editable file format will be available from the Architect as a convenience to the Contractor for use in preparing shop drawings for this Project. Refer to “Contractor Request for Electronic Drawing Files” attached to the end of this Section for procedures for ordering and transfer of files and for Architect’s limitations of liability for transfer.
    a. CAD Background Drawings files requested will be delivered in editable file format indicated, and will not be further altered by the Architect prior to delivering them to any said party.
3. Each contractor requesting electronic data file shall submit a request for Electronic Drawing Files, prior to delivery of said files. No contractor, shall transfer these Electronic Files received from the Architect, or any portion thereof to any third party (“Transferee”) without written permission of the Architect.

4. The Architect will transfer files to the requesting entity via the Project Information Management (PIM) software.
5. All files are a schematic representation of elements within the project. All Contractors are responsible for field verification and coordination with other trades.
6. Use of these files does not relieve the Contractor from producing Coordination Drawings and Shop Drawings required by the Contract.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. Submit product data, shop drawings and samples relating to a complete assembly at one time. Partial submittals will be returned without action.
   5. Interrelated color selections will not be made until all pertinent samples are received by the Architect.
   6. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow sufficient time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow a minimum of 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Resubmittal Review: Allow a minimum of 15 working days for review of each resubmittal.
   3. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow a minimum of 21 calendar days for initial review of each submittal. Any sequential reviews shall be identified on the Submittal Schedule by the Architect and agreed upon by the Project team.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
   1. Indicate name of firm or entity that prepared each submittal on label or title block.
   2. Place fully executed “Submittal Cover Sheet” attached to the end of this Section as first page of every paper submittal. Complete all required information before

submitting to Architect. Submittals received without Submittal Cover Sheet or with incomplete information on cover sheet will be returned for resubmission

3. Include Contractor's stamp indicating information complies with Contract Document requirements.
4. Submittals indicating less than complete review by Contractor will be returned for Contractor's compliance without Architect's review.
5. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form acceptable to Architect and Owner. Architect will return without review submittals received from sources other than Contractor.
   a. Transmit all submittals to Architect with a copy to the Construction Manager unless otherwise indicated.
   b. When submittal requires review of data by Structural Engineer or Mechanical or Electrical Engineers, submit a copy directly to such engineer with a copy to the Architect and the Construction Manager.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
   2. Place fully executed “Submittal Cover Sheet” attached to the end of this Section as first page of every electronic submittal. Complete all required information before submitting to Architect. Submittals received without Submittal Cover Sheet or with incomplete information on cover sheet will be returned for resubmission.
      Name file with submittal number or other unique identifier, including revision identifier.
      a. File name shall use the following identifier: [Division]-[# in series]-[submission #] [type] [description] [(response code)]
         1) Example: 099100-01-1 PD Paint & Primer (NET)
         2) Type: PD= product data, S= sample, SD= shop drawings, etc.
         3) Response Code: This should match Architect’s cover sheet stamp, e.g. NET, MCN, RR, REJ, EX.

   3. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software or electronic form acceptable to Owner**,** containing the following information:
      a. Project name.
      b. Date.
      c. Name and address of Architect.
      d. Name of Contractor.
      e. Name of firm or entity that prepared submittal.
      f. Names of subcontractor, manufacturer, and supplier.
      g. Category and type of submittal.
      h. Submittal purpose and description.
      i. Specification Section number and title.

j. Specification paragraph number or drawing designation and generic name for each of multiple items.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Indication of full or partial submittal.
o. Submittal and transmittal distribution record.
p. Other necessary identification.
q. Remarks.

F. Options: Identify options requiring selection by Architect.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Resubmittals: Make resubmittals in same form and manner as initial submittal.
1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
4. Architect’s Re-review of Submittals: If the Architect and Construction Manager are required to review any Contractor submittal more than twice, the Contractor shall bear the cost and expense associated with such additional review. Contractor shall reimburse the Owner for fees paid to the Architect for re-review of submittals through a credit change order, in accordance with the Architect’s current fee schedule.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.
1. The Contractor shall perform no portion of its work requiring submittal and review of shop drawings, product data, samples or similar submittals until the respective submittal has been approved by the Architect. Such work shall be in accordance with approved submittals.
2. The Contractor shall supply shop drawings to other Contractors engaged by the Owner to perform work in connection with the project to ensure proper coordination of its work with theirs.
3. Do not proceed with installation until an applicable copy of the submittal is in the installer's possession.
4. Do not permit use of unmarked copies of submittals in connection with construction.

K. Project Information Management System: The submittal process will be implemented through the use of a digital processing and tracking software similar to “Submittal

Exchange". Use this Project Information Management (PIM) software to transmit all submittals. Contractors must participate in and become capable in using this system.

1.5 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections. All submittals shall be submitted to Architect and Construction Manager within 25 days of contract signing.
   1. Post electronic submittals as PDF electronic files directly to project information transmission web based software specifically established for Project.
      a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   2. Action Submittals: Submit electronic file except where paper copies of submittals are specifically required.
   3. Informational Submittals: Submit electronic file except where paper copies of submittals are specifically required.
   4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
      a. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
   3. Mark each copy of each submittal to show which products and options are applicable. Strike extraneous information prior to submittal
   4. Include the following information, as applicable:
      a. Manufacturer's catalog cuts.
      b. Manufacturer's product specifications.
      c. Standard color charts.
      d. Statement of compliance with specified referenced standards.
      e. Testing by recognized testing agency.
      f. Application of testing agency labels and seals.
      g. Notation of coordination requirements.
      h. Availability and delivery time information.
   5. For equipment, include the following in addition to the above, as applicable:
      a. Wiring diagrams showing factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   6. Submit Product Data before or concurrent with Samples.
   7. Submit Product Data in the following format:

a. PDF electronic file, unless requested by Architect.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted. Standard information prepared without specific reference to the Project is not considered a Shop Drawing. Verify field measurements prior to preparation of shop drawings.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Identification of products.
      b. Schedules.
      c. Compliance with specified standards.
      d. Notation of coordination requirements.
      e. Notation of dimensions established by field measurement.
      f. Relationship and attachment to adjoining construction clearly indicated.
      g. Seal and signature of professional engineer if specified.
   2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
   3. Submit Shop Drawings in the following format:
      a. PDF electronic file, unless requested by Architect.
      b. In addition to submission of electronic files, submit 3 paper copies of fire alarm shop drawings and sprinkler shop drawings with Contractor approval stamps applied, for submittal to the AHJ Code Review for review and comment, as required.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
   1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
   2. Identification: Attach label on unexposed side of Samples that includes the following:
      a. Generic description of Sample.
      b. Product name and name of manufacturer.
      c. Sample source.
      d. Number and title of applicable Specification Section.
      e. Specification paragraph number and generic name of each item.
   3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
   4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
      a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
   2. Manufacturer and product name, and model number if applicable.
   3. Number and name of room or space.
   4. Location within room or space.
   5. Submit product schedule in the following format:
      a. PDF electronic file.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 013115 “Coordination Drawings.”

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Section 01 7823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research/Evaluation Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
   1. Name of evaluation organization.
   2. Date of evaluation.
   3. Time period when report is in effect.
   4. Product and manufacturers' names.
   5. Description of product.
   6. Test procedures and results.
   7. Limitations of use.

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

1.6 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 2 - EXECUTION

2.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect .

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 7700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

2.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Architect's Actions:
1. Contractor may proceed with fabrication on submittals marked "No Exception Taken" or "Make Corrections Noted" provided that the Contractor adheres to the corrections noted.
2. Contractor may not proceed with fabrication on shop drawings noted "Revise and Resubmit" or "Rejected" until "No Exception Taken" or "Make Corrections Noted" stamp is received on resubmitted drawing.
3. Contractor may not proceed with fabrication on the specific shop drawings noted "Partial Resubmit" until "No Exception Taken" or "Make Corrections Noted" stamp is received on resubmitted drawing.
4. Do not permit submittals marked "Revise and Resubmit," or "Rejected," to be used at Project site, or elsewhere where Work is in progress.
5. Other Action: Where submittal is primarily for information or record purposes, special processing or other activity, submittal will be returned, marked "No Action Taken."

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

ATTACHMENTS:
Submittal Cover Sheet
Contractor's Request for Electronic Drawing

SUBMITTAL COVER SHEET

Contractor:_____

Address:_____ **Telephone:** (__)_____

Owner:

Name of Project:

TYPE OF SUBMITTAL:

☐Shop Drawings ☐Schedule ☐Physical Sample
☐Technical Data ☐Certificate ☐Color Sample
☐Test Report ☐Warranty ☐_____

Submission #: (circle one) **1st 2nd 3rd 4th**

Description:

Product Identification: _____

_____

Manufacturer: _____

Subcontractor/Supplier:_____

DOCUMENT REFERENCES: (Must be fully filled out)

Spec Section No.:_____ Drawing No(s):_____

Paragraph: _____ Rm. Or Det. No(s):_____

Contractor Remarks:

Contractor Submittal Review Stamp

THE ATTACHED MATERIAL HAS BEEN REVIEWED BY THE UNDERSIGNED AND IS BELIEVED TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE UNDERSIGNED UNDERSTANDS VERIFICATION OF FIELD DIMENSIONS, AND COORDINATION WITH OTHER TRADES, REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

DATE: _____ BY (SIGN): _____

Consultant use below this line:

Architect Submittal Review Stamp

☐NO EXCEPTIONS ☐MAKE CORRECTIONS NOTED
☐REJECTED ☐REVISE AND RESUBMIT
☐EXAMINED ☐SUBMIT SPECIFIED ITEM

CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS & SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS WHICH SHALL BE CONFIRMED & CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES & THE SATISFACTORY PERFORMANCE OF HIS WORK

KG+D ARCHITECTS, P.C.

DATE_____ BY_____

CONTRACTOR REQUEST FOR ELECTRONIC DRAWING FILES

The Architect, for the convenience of the Client/Owner, has electronic copies or representations of Drawings, Specifications and Project Manuals. Requests for electronic copies of such Drawings, Specifications and Project Manuals by the Contractor, for the Contractors use or the use of Subcontractors, shall be made in writing to the Client/Owner as outlined hereinbelow and shall outline the benefit derived from such a request. The Contractor shall be prepared to reimburse the Client/Owner for any costs involved in preparing such electronic documents for the Contractors use.

Architect's Project Number:	
Project Name:	
Architect:	
Client/Owner:	
Contractor/Recipient's Name:	
Attention to:	
Contractor/Recipient's Address:	
Date of Request:	
Date of Release:	

As requested, attached is a list of electronic drawing files. For the release of these electronic drawing files to the recipient, the following items shall be understood, acknowledged and signed by the authorized personnel of the recipient with the fee included.

A. The electronic drawing files are the property of the Architect and the Contractor is granted a license to use the electronic files only in connection with the subject project.

B. The electronic drawing files do not necessarily represent the Contract Documents associated with the referenced project. These files are solely for the use of the recipient and are not a representation of the scope of work for the project. Any use by contractors, subcontractors or fabricators shall be on all of the same terms and conditions being applicable to such users who shall acknowledge the same in writing. The Recipient may use the electronic drawing files only. Electronic drawing files or portions thereof, shall not be provided to anyone else without the written approval of the Client/Owner. The use of the electronic drawing files, documents and any reprographics shall not identify any member of the Architect or Architect's consultants or sub-consultants or the Client/Owner without the written approval from the parties.

C. The entire risks as to the results and performance of the package including the electronic drawing files, are assumed by the Contractor/recipient. The Client/Owner, the Architect and the Architect's consultants and sub-consultants, including directors, employees,

representatives, and licensors of the company, shall not have any liability to the Contractor/recipient or any other person or entity for any direct, indirect, incidental special or consequential damages whatsoever, including, but not limited to, the loss of revenue or profit, lost data, or any other personnel, commercial or economic loss, and claims by third parties. Even if the Client/Owner and Architect and the Architect's consultants and sub-consultants has been advised of the possibility of such damages; said Client/Owner and Architect and the Architect's consultants and sub-consultants shall not be held liable as stated above.

D. The Contractor/recipient hereby agrees to indemnify and hold the Client/Owner, the Architect and the Architect's consultants and sub-consultants harmless from and against any cost, damage, liability, loss or claim arising from violation of this license. The Contractor/recipient and all subcontractors of all tiers also agrees that, in addition to all other remedies hereunder, the Contractor/recipient and such parties grant the Client/Owner the right to seek injunctive or other equitable relief to prevent the violation or require the performance of any of the Contractor's/recipient's obligations under this license, and the Contractor/recipient hereby consents to the issuance of such relief by any court of competent jurisdiction without the need to post any bond or security.

E. The electronic files requested are as follows:

Electronic file name	Corresponding Drawing (close approximation)
1.	
2.	
3.	
Etc.	
Total number of files:	

CONTRACTOR'S/RECIPIENT'S AGENT SIGNATURE: _____

NAME IN BLOCK LETTERS: _____

AUTHORIZED POSITION HELD: _____

DATE OF SIGNATURE: _____

End of Attachment

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

1. This Section does not include requirements for performing Special Inspections and Tests in compliance with Chapter 17 of the Building Code of New York State; refer to Section 014100.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Owner.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

J. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

1.3 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data For Contractor's quality-control personnel.

B. Contractor's Statement of Responsibility: Submit copy of written statement of responsibility, acknowledging awareness of the special requirements contained in the Statement of Special Inspection, to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspection.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspection.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.

8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, an agency accredited by the International Accreditation Service, Inc. or an equivalent accreditation agency accrediting in accordance with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, Construction Manager and Owner’s Commissioning Authority, through Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect and Construction Manager minimum seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.

a. Allow minimum seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed or incorporate approved in-place mock-ups in the finished work, as specifically instructed in each specification section where a mock-up is required.

1.8 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation,

including service connections. Report results in writing as specified in Section 01 3300 "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.9 SPECIAL INSPECTIONS

A. Special Inspections: Owner will engage qualified testing agency(ies) and special inspectors to conduct special inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Division 01 Section “Special Inspections and Tests”.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and Construction Manager’s reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section “Cutting and Patching.”

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014100 - SPECIAL INSPECTIONS AND TESTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for performing Special Inspections and Tests in accordance with requirements of Chapter 17 of the *Building Code of New York State* (BCNYS). Testing and inspecting services are required to verify compliance with requirements specified or indicated in the contract documents. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1.2 DEFINITIONS

A. Registered Design Professional: The Registered Architect whose seal appears on the Construction Drawings.

B. Testing/Inspecting Agency: An agent retained by the Owner and coordinated by the Special Inspector, to perform some of the testing and/or inspection services on behalf of the Special Inspector. (An example of an Inspecting Agency would be a Geotechnical Engineer).

C. Statement of Special Inspections: A document prepared by the Registered Design Professional that includes the Schedule of Special Inspections listing the materials and work requiring Special Inspections. A copy of this document is included at the end of this Section.

D. Continuous Special Inspection: The full-time observation of work requiring Special Inspections by the Special Inspector who is present in the area where the work is being performed.

E. Periodic Special Inspections: The part-time or intermittent observation of work requiring Special Inspections by the Special Inspector who is present in the area where the work has been or is being performed and at the completion of the work

1.3 CONTRACTOR RESPONSIBILITIES

A. Contractor shall cooperate with the Special Inspector and his agents so that Special Inspections and testing may be performed without hindrance.

B. Contractor shall notify the Special Inspector and/or Testing/Inspecting Agency at least 48 hours in advance of a required inspection or test. Contractor shall coordinate sequence of activities to accommodate required inspection and testing services with a

minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

C. The Contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.

D. The Contractor shall keep at the project site the latest set of Construction Drawings, field sketches, accepted shop drawings, and specifications for field use by the Inspectors and Testing Technicians.

E. The Special Inspection program shall in no way relieve the Contractor of his obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program.

1.4 QUALITY CONTROL

A. Construction Manager will hold a Special Inspections preconstruction meeting at least 7 days prior to the initial planned date for start of construction.

1. Discussion shall include review of specifications and Schedule of Special Inspections for work requiring Special Inspections; responsibilities of Contractor, Owner, Testing Agency, Special Inspector, and Registered Design Professional; notification procedures; and reporting procedures.
2. Attendees shall include the Contractor, Owner's representative, Testing Agency, Special Inspector, and Registered Design Professionals for Structural Engineering and for Architecture.

1.5 LIMITS ON AUTHORITY

A. The Special Inspector or Testing/Inspecting Agency shall not release, revoke, alter, or enlarge on the requirements of the Contract Documents.

B. The Special Inspector or Testing/Inspecting Agency shall not have control over the Contractor's means and methods of construction.

C. The Special Inspector or Testing/Inspecting Agency shall not be responsible for construction site safety.

D. The Special Inspector or Testing/Inspecting Agency shall not have the authority to stop the work.

1.6 STATEMENT OF SPECIAL INSPECTIONS

A. The Statement of Special Inspections and Tests, on the form included at the end of this Section, will be prepared by the Registered Design Professional.

B. Required inspections and tests are described in the Schedule of Special Inspections and Tests attached to the end of this Section and in the individual specification sections for the items to be inspected or tested .

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used).

END OF SECTION 014100
ATTACHMENTS
SPECIAL INSPECTION NON-CONFORMANCE REPORT FORM
NYSED STATEMENT OF SPECIAL INSPECTIONS AND TESTS

SPECIAL INSPECTION NON-CONFORMANCE REPORT NO.

DATE:

TO: Registered Design Professional (RDP)
KG + D Architects, PC
285 Main St., Mount Kisco, NY 10549
Fax: (914) 666-0051

CC: Contractor:

FROM: _____, Special Inspector

PROJECT: Additions and Alterations Siwanoy Elementary School
Pelham Union Free School District

PART I: REFERENCE SPECIAL INSPECTION REPORT NO. _____.
(Attach copy of report.)

DESCRIPTION OF NON-CONFORMANCE:

RDP RESPONSE: (PROVIDE ATTACHMENTS IF NECESSARY)

RDP SIGNATURE _____ DATE_____
IS REINSPECTION BY SPECIAL INSPECTOR REQUIRED ☐YES ☐NO

PART II: CONTRACTOR VERIFICATION (To be completed by either the ***[General Contractor or Construction Manager]*** or Subcontractor and returned to the Special Inspector and the RDP.)

I verify that as of the date listed, the non-conforming item noted above has been corrected as required.

SIGNATURE _____ DATE_____

NYS EDUCATION DEPARTMENT Office of Facilities Planning 89 Washington Avenue, Room 1060 EBA Albany, NY 12234	STATEMENT OF SPECIAL INSPECTIONS AND TESTS As required by the Building Code of NYS (2020 BCNYS) *Note: The code listings below are not to be considered all inclusive.*

BCNYS § 1704.2.3 requires the NYS Licensed Design Professional (of record) to complete the Statement of Special Inspections and Tests. Completion of the Statement of Special Inspections & Tests, **and;** Submission to the Office of Facilities Planning with the Construction Permit Application is a condition for issuance of the Building Permit.

School District	Project Title
Pelham Union Free School District	Siwanoy Elementary School Additions & Alterations
Building	
Siwanoy Elementary School	
SED Project #	**Project Address**
661601-03-0004-014	489 Siwanoy Pl, Pelham, NY 10803

Architect/Engineer Certification

Seal of R. A. licensed in New York State

Signature - Architect Date

I, the undersigned, do hereby certify that: (Check appropriate box)

☐ **There are no special inspections required for this project, or**

☑ **The scope of this project requires special inspections as listed below, which will be conducted throughout the construction of this project**



Seal of P.E. licensed in New York State

Ryan B. Walsh 7/10/202

Signature - Engineer Date

A/E Firm (or Dba):	Phone	Date

Comments:

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS-CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.		CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
A.	**Steel Construction**						
1.	Material verification of high-strength bolts, nuts and washers.		X	AISC 360	1705.2 2204	☑	Spec. Section 051200
2.	Inspection of high-strength bolting.	X	X	AISC 360 ACI 318	1705.2 2204.2	☑	Spec. Section 051200
3.	Material verification of Structural Steel.			AISC 360, ASTM A29 & A514	1705.2	☑	Spec. Section 051200
4.	Open Web Steel Joist and Girders.			ASTM A29, SJ100 or SJ200	1705.2.4 2207	☐	
5.	Basic protection of steel members, **Seismic Resistance**			AICS 341	1705.2 2207.1.1	☐	
6.	Spray Applied Fire Resistant Materials & Specialized Finishes			ASTM E605, E736	1705.15 - 1705.20	☐	

7.	**Cold Formed Steel Construction**- load bearing.			AISI S100, S220, S240 ANSI/SDI -NC1.0, 1.0RD SDI-C, ASCE 7, 8	1704.2.5 2204 2210.1.1.2 2211	☐	

INSPECTION AND TESTING **Continuous & Periodic is as Defined by the BCNYS-CHAPTER 17** **All reports to be submitted to the owners representative for use, approval and record.**		**CONTINUOUS**	**PERIODIC**	**REFERENCE STANDARD**	**BCNYS REFERENCE**	**CHECK IF REQUIRED**	**IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY**
A.	**Steel Construction - cont.**						
8.	**Seismic Resistance**			ASCE 7, 8	2211	☐	
9.	Material verification of weld filler materials.			AWS D1.1, D1.3	1705.2 2201.4	☑	Spec. Section 051200
10.	Inspection of welding:			ACI 318: 26.6.4	T 1705.3 2204	☑	Spec. Section 051200
	a. Structural steel	X	X	AWS D1.1, D1.3	1705.2	☑	Spec. Section 051200
	b. Reinforcing steel	X	X	AWS D1.1, D1.3	1705.3.1	☐	
	c. Cold Formed Steel Deck			AISC S100, ASCE 7, 8	1705.2.3	☑	Spec. Section 053100
11.	Inspection of steel frame joint details.		X		1705.2	☑	Spec. Section 051200
B.	**Concrete Construction**						
1.	Inspection of reinforcing steel, including prestressing tendons, and verify placement.		X	Ch. 21, 22 ACI 318; Ch 20, 25.2, 25.3, 26.6.1, 26.6.3 AISC 360	T 1705.3 1901 1905	☑	Spec. Section 032000
2.	Inspection of reinforcing steel bar welding.			ACI 318, AWS D1.4	T 1705.3	☐	
3.	Inspection of anchors to be installed in concrete prior to and during placement.	X		ACI 318: 17.8.2, 17.8.2.4	T 1705.3	☑	Spec. Section 032000
4.	Verify use of required design mix.		X	ACI 318: Ch. 19, 26.4.3, 26.4.4	T 1705.3 1904 1908	☑	Spec. Section 033000
5.	Sampling fresh concrete: slump, air content, temperature, strength test specimens.	X		ASTM C172, C31 ACI 318: 26.5, 26.9, 26.10, 26.11	T 1705.3 1901 1905 1908	☑	Spec. Section 033000
6.	Inspection of placement for proper application techniques.	X		ACI 318: 26.5	T 1705.3	☑	Spec. Section 033000
7.	Inspection for maintenance of specified curing temperature and techniques.		X	ACI 318: 26.5	T 1705.3 1908 1909	☑	Spec. Section 033000
8.	Inspection of prestressed concrete.	X		ACI 318: 26.10	T 1705.3	☐	
9.	Erection of precast concrete members.		X	ACI 318: 26.9	T 1705.3	☐	
10.	Verification of in-situ concrete strength prior to stressing of tendons and prior to removal of shores and forms from beams and slabs.		X	ACI 318: 26.11.2	T 1705.3	☐	
11	Inspection of formwork		X	ACI 318: 26.11.1.2 (b)	T 1705.3	☑	Spec. Section 031000
C.	**Masonry Construction**						
	L1 = Level 1 Inspection required for nonessential facilities. **L2 =** Level 2 Inspection required for essential facilities. * In general, schools are not considered essential facilities unless they are a designated emergency shelter.			ASTM E119 UL 263 ASTM C1364 ASTM C1670 ASTM A706 ASCE 7, 8 TMS 402, 403, 404, 504, 602	1705.4 2101 1604		

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS-CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
C. Masonry Construction - cont.						
1. Verify to ensure compliance:					☐	
a. Proportions of site prepared mortar and grout.		X L1 & L2		1705.4 2103.2	☑	Spec. Section 0422000
b. Placement of masonry units and construction of mortar joints.		X L1 & L2		1705.4 T 1705.3	☑	Spec. Section 0422000
c. Location and placement of reinforcement, connectors, tendons, anchorages.		X L1 & L2		1705.45 2103.4 T 1705.3	☑	Spec. Section 0422000
d. Prestressing technique.		X L1		1705.4	☐	
Grout space prior to grouting.	X L2			1705.4	☐	
e. Grade and size of prestressing tendons and anchorages.		X L1		1705.4	☐	
Placement of grout.	X L2			1705.4	☐	
f. Grout specs prior to grouting.	X L2			1705.4	☑	Spec. Section 0422000
2. Inspection program shall verify:					☑	Spec. Section 0422000
a. Size and location of structural elements.		X L1 & L2		1704.5 1705.4	☑	Spec. Section 0422000
b. Type, size, and location of anchors.	X L2	X L1		1705.4 T 1705.3	☑	Spec. Section 0422000
c. Specified size, grade, and type of reinforcement.		X L1 & L2		1704.5	☑	Spec. Section 0422000
d. Welding of reinforcing bars.	X L1 & L2			1704.5	☐	
e. Cold/hot weather protection of masonry construction.		X L1 & L2		1704.5, 2103.3 2103.4	☑	Spec. Section 0422000
f. Prestressing force measurement and application.	X L2	X L1		1704.5	☐	
3. Verification accessory placement prior to grouting:	X L2	X L1		1704.5, 2105.1	☑	Spec. Section 0422000
4. Grout placement.	X L1			1704.5	☑	Spec. Section 0422000
5. Preparation of grout specimens, mortar specimens, and/or prisms.	X L1 & L2			1704.5, 2105.1	☐	
6. Compliance with documents and submittals.		X L1 & L2		1704.5	☑	Spec. Section 0422000
D. Wood Construction						
1. Fabrication process of prefabricated **Wood Structural Elements** and assemblies.		X	Ch. 16 AWC, APA, CPA, DOC PS1, PS2	1703.6, 1705.5 2302, 2303 2304	☐	
2. High-load diaphragms **Seismic Resistance**		X		1704, 1705, 1704.6 2304, 2305 2306, 2307, 2308	☐	

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS-CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
E. Soils						
1. Geotechnical Investigations, Excavations, Grading, Fill Damp-proofing/ Water-Proofing		X	ASTM, NYS DOT OSHA Appendix J- BCNYS	1704, 1706 1803, 1804, 1805	☑	See Geotechnical Report
2. **Flood & Stormwater Hazards** [per BCNYS 107]		X	Local Highway Authority Flood Plain Admin. Appendix G- BCNYS	1703 1610, 1611, 1612 1805.1.2.1	☐	
F. Specialized Foundations- Piers, Piles				**Ch. 16**		
1. Deep Foundation Elements: Driven Piles Cast in Place Helical Piles		X		T 1705.7 T 1705.8 1705.7 1705.8 1705.9	☐	
G. Exterior Wall Coverings				**Ch. 14**		
1. Exterior Insulation and Finish Systems (EIFS) MCM, HPL, Other Combustible Materials		X	ASTM E2568, E2273, E2570 E2393, E84 Ch. 16 NFPA 268, 275, 285, 286	1405, 1406, 1407, 1408 1704.2, 1705.12 1705.17, 1705.13.5	☐	
H. Misc.						
1. Access Floors and Storage Racks Other Architectural, MEP Components **Seismic Resistance**		X		1705.12	☐	
2. In-Situ Testing		X		1604.6, 1708	☐	
3. Pre-Construction Load Testing		X		1604.7, 1709	☐	
4. Fire Resistant Penetrations & Joints Fire Stops Testing for Smoke Control	X	X	Ch. 7 ASTM E119 UL 263	1705.18	☐	
5. **Pre-Submission:** **Inventory of all Fire-Resistant-Rated Construction- Level 2 Alterations and greater** [per BCNYS 107]	X	X	verification required EBCNYS Ch. 3 C. of E. 155 Regulations.	**FCNYS 701.6** **BCNYS 701.2** **19CRR-NY XXXII**	☐	
6. **Pre-Submission:** **Hazardous Material Survey** **Water Quality Survey**	X X		verification required ACM Letter- Certificate C. of E. 155 Regulations.	US-EPA NYS-DOH	☐	
7. Other:					☐	

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, Construction Manager, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.

C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show any proposed deviations from the temporary facilities, utility hookups, and staging areas for construction personnel indicated on the Construction Manager’s Phasing and Logistics Plans.

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Moisture-Protection Plan: Ensure procedures and controls for protecting materials and construction from water absorption and damage in accordance with manufacturer and supplier requirements and recommendations.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Owner/CM/Architect Field Office: General Construction Contract shall furnish and equip offices at the Project site.

1. Provide 12'x 60'w/ hitch, Office by Williams Scotsman for use by Owner/Construction Manager/Architect personnel engaged in construction activities.
   (1) Office trailer must have toilet facilities and sink, contractor needs to maintain/service the toilet for the duration of the project at Owner/CM/Architect trailer.
   (2) The trailer shall have a lactation room minimum 4'x6' with a countertop and a receptacle in the room. The lactation room door shall have a lock and there shall be a supply air louver connected to the ventilation system
   (3) The Trailer is to be tied down and fully skirted.
   (4) The trailer location is indicated on the Construction Manager's Phasing and Logistics Plan.
2. Trailer to have exterior lighting
3. Provide (1) High speed internet service with wireless router and Ethernet Switch
4. Provide the following equipment :

(1) May-line Pivot Wall Rack with 24 Racks (Installation by GC) or standing type.
(1) Laser Color Multifunction printer/copier/fax/scanner with 11x17 paper tray with Network capability by Ricoh standalone unit or equal, (provide ink and paper supplies for the project duration) to include 24 hour on call servicing
(1) 4 Drawer File Cabinet heavy duty
(3) Wall Mounted Shelves (6'x14") Installation by GC.
(2) Tack boards 36" x 48" Installation by GC
(2) White boards 36" x 48" with erasers and markers, installation by GC
(3) Desk (66"W x 30"D x 29-1/2"H) w/ (4) Padded Swivel Manager Desk Chair (Staples® Carder Ergonomic Fabric Swivel Computer and Desk Chair, Black 24115-CC)
(1) Large trash container (32 gal) and (3) small trash container (13 gal) (provide bags for project duration and weekly cleanup of trailer)
(3) Conference Table (30"W x 72"L x 29"H)
(12) Vinyl Padded Folding Chairs
(1) Cold/Hot water dispenser (provide delivery service for project duration)
(1) 3.6 Cu. Ft. Refrigerator w Freezer
(1) 0.7 Cu. Ft. Microwave Oven

(1) First aid kit - Global Industrial First Aid Kit - 3 Shelf Steel Cabinet, ANSI Compliant, 75-100 Person
(2) Fire Extinguisher- shall be UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

5. Security System, 2 wireless cameras, one camera installed opposite each entry door that records entry and movement in the trailer and signals an alarm. .
6. Drinking water and private toilet.
7. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg. F (20 to 22 deg. C).
8. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
9. Field office shall be secured daily.
10. Field office to be swept, mopped and toilet facilities sanitized weekly
11. Provide security bars at doors and security screens at all windows.
12. Provide stairs at each door.
13. Provide Three-inch (3) gravel base, for area at Owner trailer area as per CM direction.
14. Provide (2) Two heavy duty master locks with (4) four keys
15. Electrical shall provide temporary power to the Field Office.

B. On Site Storage: On site storage shall be limited to the areas indicated on the Construction Manager's Phasing and Logistics Plans.

1. Store combustible materials apart from building.
2. No storage space will be available within the existing building during the School Year.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities as shown on the Construction Managers Phasing and Logistics Plans or as specifically approved by the Construction Manager. Relocate and modify facilities as required by progress of the Work and phases of construction.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to existing system.

C. Water Service: Connect to Owner's existing water service source. Install water service distribution piping in sizes and pressures adequate for construction. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
1. The Plumbing Contractor shall:
    a. Provide and maintain a temporary water system of size and capacity as required below to supply the needs of all Contractors for the work.
    b. Provide no less than two 3/4 inch hose bibs conveniently located at the addition.
    c. Provide and pay for all connections and permits.
    d. Install such temporary water system so that service shall be available at the commencement of the work. The permanent water risers and lines may be used for temporary water supply. The permanent services shall be turned over to the Owner in perfect condition. Any repairs required due to temporary use shall be made at the sole expense of the plumbing contractor.
    e. Protect temporary and permanent lines against any damage.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Provide sanitary facilities in locations indicated on the Construction Managers Phasing and Logistics Plans.
1. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with governing regulations including safety and health codes for the type, number, location, operation and maintenance of fixtures and facilities; provide not less than specified requirements. Install in locations which will best serve the project’s needs. Owner's existing facilities shall not be used.
    a. Responsibilities: The General Construction Contractor is responsible for temporary sanitary facilities and their maintenance, cleaning and supplies for use by all trades. Sufficient quantity/locations to properly handle the amount of workers on-site.
    b. Supply and maintain toilet tissue, paper towels, paper cups and other disposable materials as appropriate for each facility, including Owner's Construction Representative temporary offices for full contract duration. Provide covered waste containers for used material.
    c. Install self-contained toilets to the extent permitted by governing regulations.

E. Electric Power Service: Connect temporary service to Owner's existing power source, as directed by Owner. Provide separate metering. Provide electric power service distribution system of sufficient size, capacity, and power characteristics required for construction operations.

F. Temporary Heat:

1. Temporary Heat for Interior Construction:
    a. The Mechanical Contractor will maintain 60 degree temperature in all areas via temporary and/or permanent systems. The Mechanical Contractor will submit a detailed plan including sketches indicating his proposed temporary heating system for engineer approval prior to commencing temporary heat. The Electrical Contractor will provide temporary power for the Mechanical Contractor's units for temporary heating. General Contractor will insure all windows / doors and work areas are fully enclosed. (Any missing components at time of temporary heat activation will be enclosed via 5/8 inch thick plywood, 2" rigid polyisocyanurate and 6-mil fire-retardant polyethylene sheeting for a weather-tight insulated enclosure.)
    b. The fuel, equipment, materials, operating personnel and methods used therefore shall be at all times satisfactory to the Construction Manager. The use of electric heaters is not acceptable. All required fuel is part of this contract.
    c. The Contractor shall maintain the critical installation temperatures provided in the technical provisions of the specifications herein for all work in those areas where same is being performed.
    d. The maintenance of proper heating, ventilation and adequate drying out of the work is the responsibility of the contractor and any work damaged by dampness, insufficient or abnormal heating, shall be replaced to the satisfaction of the Architect by and at the sole expense of the contractor.
    e. Use of the permanent system, if approved by Construction Manager, shall not shorten, or negate any equipment, or system guarantees required under this contract. (the warranty period starts upon the date of Substantial Completion). Two additional filter changes are to be provided by Mechanical Contractor. A program of use, maintenance and restoration will be submitted with request for use of systems for temporary services.
2. Temporary Heat for Exterior Construction:
    a. Temporary heat required for exterior construction shall be provided by the contractor requiring requiring the heat. The provision of temporary heat shall include all equipment, labor, fuel, temporary enclosures, monitoring, fire watch, and the like to complete the provision of temporary heat.
    b. Prior to commencing exterior temporary heat, the contractor shall submit a detailed plan to the Construction Manager for review and approval.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

H. Telephone Service: Provide superintendent with cellular telephone for project communication purposes. Supply phone number to construction Manager, Architect and Owner.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Parking is not available on site. Contractors shall be responsible for parking on public roads according to municipal laws and agreed upon locations designated by the school district and local authorities. See the Construction Manager's Phasing and Logistics Plans.

C. Temporary Use of Permanent Roads and Paved Areas: Limit use of existing roads on school campus to those designated by Owner as assigned construction route. Maintain roads in clean dust-free and dirt-free condition; clean roads of mud and debris caused by construction traffic. See the Construction Manager's Phasing and Logistics Plans.

D. Traffic Controls: Provide traffic control signage of type approved by Owner to direct traffic at and around construction site. Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

F. Project Signs: Each Prime Contractor shall provide project signs as required and indicated on the Construction Manager's Phasing and Logistics Plans.. Unauthorized signs are not permitted.

1. Temporary Signs: Provide signs as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

2. Maintain and touchup signs so they are legible at all times

G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

1. Each Prime Contractor shall provide a dumpster for their own waste. See the Construction Manager's Phasing and Logistics Plans.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
2. All crane picks, material delivery, etc. must be coordinated so as not to lift over any occupied area of the building. This work will be done on off hours to ensure the safety of the building occupants. Crane locations must be carefully chosen to ensure the safety of building occupants. Crane picks must not be conducted during academic hours within 20 feet of an occupied building. All hoisting and crane picks must be coordinated with the Construction Manager. Rigging insurance must be provided by each prime contractor.

I. Scaffolding: In the event a contractor requires a scaffolding system to access the work, the contractor shall provide a engineered drawing, certified by a licensed NYS PE verifying the design and system is acceptable. Scaffolding shall not obstruct access to entrances or rescue windows.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities. **Special attention shall be paid to protect the Micro-Forest from physical damage and silt runoff. See the Construction Manager's Phasing and Logistics Plans.**

B. Each contractor shall be responsible for security of its own tools, materials, and equipment.

C. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of Erosion and Sediment Control Drawings.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Site Enclosure Fence: See the Construction Manager's Phasing and Logistics Plans. Before construction operations begin, each Prime Contractor shall furnish and install site enclosure fence for their portion of the Work in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence:
   a. As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
   b. As required to totally enclose storage/staging areas on site.

2. Type of Fence: All temporary construction site fences installed by any Prime Contractor shall be installed with a tightly woven, blind screen mesh. This mesh is to be installed on the "construction" side of the fence. Contractor shall maintain all fencing daily and lock gates at the end of the day. Mesh color shall be dark blue.
3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Construction Manager and Owner.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Egress: Maintain temporary egress from existing occupied facilities at all times.

J. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas.

2. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with Owner and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 TEMPORARY PARTITIONS

A. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, noise and odors from entering occupied areas. Prevent unauthorized persons from entering occupied areas. Inadequate dust, fume, noise, and odor control shall be grounds for the Owner to stop the work and required the Contractor to perform the work at an alternate time and in an accelerated schedule. **Schedule delays caused by the Contractor's in ability to provide adequate protections shall be the sole responsibility of the Contractor.**

1. When working on an after-hours basis during the school year, each Contractor shall supply, set up and remove each night retractable belt stanchions to isolate the work area from people still at the school during off hours. Signage indicating Construction In Progress shall be attached to the retractable stanchion

B. The General Construction Contractor shall erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate work areas. See the Construction Manager's Phasing and Logistics Plan

C. Construct dustproof, floor to ceiling partitions of not less than 3-5/8" - 20 ga. studs; 2 layers of 6 mil fire-retardant polyethylene sheets inside / outside; 5/8 inch thick exterior grade fire-retardant plywood; 5/8 inch thick interior, Type X gypsum board, taped spackled (1 coat) and painted.

D. Cover floor with 2 layer fire retardant polyethylene and extend 18 inches vertically at each side. Overlap and tape all joints.

E. Sound insulate partitions to provide noise protection to occupied areas

F. Caulk joints and perimeter to prevent dust migration. Equip partitions with dustproof doors and security locks.

G. In addition to any temporary partition locations shown on drawings, the General Construction Contractor shall include in its base bid a minimum of fifty (50), 9 foot by 12 foot temporary partitions meeting criteria listed above for use and located where directed by the Owner's Construction Representative. Each location shall be equipped with a 3 foot wide by 7 foot high hollow metal door/frame with hinges, closer and exit device hardware.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015719 - ENVIRONMENTAL PROTECTION DURING CONSTRUCTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Scope
B. Applicable Regulations
C. Notification
D. Implementation
E. Protection of Land Resources
F. Recording and Preserving Historical and Archaeological Finds
G. Protection of Water Resources
H. Burning
I. Dust and Mud Control
J. Maintenance of Pollution Control Facilities During Construction

1.2 SCOPE

A. The work covered by this section consists of furnishing all labor, material and equipment and performing all work required for the prevention of environmental pollution during and as the result of construction operations under this contract except for those measures set forth in other Technical Provisions of these specifications.

For the purpose of this specification environmental pollution is defined by regulatory authorities as the presence of chemical, physical or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes.

The control of environmental pollution requires consideration of air, water and land, and involves noise, solid waste-management and management of radiant energy and radioactive materials, as well as other pollutants.

B. Compliance with the provisions of this section by all Subcontractors shall be the responsibility of the Contractor.

1.3 APPLICABLE REGULATIONS

A. In order to provide for abatement and control of any environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, they shall comply with all applicable Federal, State and local laws, and regulations concerning environmental pollution control and abatement as well as the specific requirements stated elsewhere in the contract specifications.

1.4 NOTIFICATION

A. The Architect will notify the Contractor in writing of any non- compliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Architect may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost on account of any such stop orders shall be made the subject of a claim for extension of time or for extra costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

1.5 PROTECTION OF LAND RESOURCES

A. It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans or specifications.

B. The following additional requirements are intended to supplement and clarify the requirements contained in the General Conditions.

The location on the project site of the Contractor's storage and other construction buildings, required temporarily in the performance of the work, shall be upon assigned portions of the job site and shall require written approval of the Architect.

The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the overall construction of buildings.

Plans showing storage and office facilities shall be submitted for approval of the Architect.

C. If the Contractor proposes or is required to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least 21 days prior to scheduled start of such temporary work.

1. A layout of all temporary access roads, excavations and embankments to be constructed with the work area.
2. Plans and cross sections of proposed embankments and their foundations, including a description of proposed materials.

1.6 RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

A. All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Architect so that the proper authorities may be notified.

1.7 PROTECTION OF WATER RESOURCES

A. The Contractor shall not pollute streams, lakes, reservoirs or public waters

with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of surrounding public waters. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in public waters through or adjacent to the project areas.

B. Prior to any major construction the Contractor shall submit a plan for approval by the Architect showing his scheme for controlling erosion and disposing of waste.

C. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in suitable sedimentation ponds or shall be graded to control erosion within acceptable limits.

Temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required to meet the above standards, shall be provided until permanent drainage and erosion control facilities are completed and operative.

Fills and waste areas shall be constructed by selecting placement to eliminate silts or clays on the surface that will erode and contaminate adjacent public waters.

D. At all times of the year, special measures shall be taken to prevent chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.

E. Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to public waters shall be subject to the approval of the Architect. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Architect, refilled with clean material and compacted all at the expense of the Contractor.

1.8 BURNING

A. Burning will not be permitted.

1.9 DUST AND MUD CONTROL

A. The Contractor shall at all times provide adequate dust control measures. He shall accomplish this, without interference to the public and vehicular transportation.

B. To control dust, it is required that all vehicles transporting dust producing materials to and from the job shall be covered with tarpaulins securely tied down, be sprinkled when necessary or be satisfactorily treated by other approved methods.

C. Trucks leaving excavations shall be water washed prior to entry on access roads or public streets to remove mud and other deleterious substances from wheels and undercarriages.

D. All public and private ways adjacent to the site shall be broomed and flushed whenever necessary in the opinion of the Architect. Drainage systems shall be cleaned and flushed whenever mud or debris hinders the flow of storm water to or in the sewers.

E. The Contractor shall immediately remove refuse, rubbish, debris and soil accumulations on roads, streets and on sidewalks, caused by wind, rain and snow erosions or by his own operations to prevent traffic hazards or interference with road drainage.

1.10 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. During the life of this contract the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the construction period the Contractor shall conduct frequent training courses for his maintenance personnel. The curriculum shall include methods of detection of pollution, familiarity with pollution standards, and installation and care of vegetation covers, plants and other facilities to prevent and correct environmental pollution.

End of Section

SECTION 015723 - TEMPORARY EROSION AND SEDIMENT CONTROL AND STORM WATER POLLUTION CONTROL

1.1 GENERAL

A. The attached Stormwater Pollution Prevention Plan (SWPPP) contains requirements for temporary stormwater pollution controls and temporary erosion and sediment controls which shall be performed as part of the Work of this Project. Provide all the construction phase activities described in the SWPPP and as indicated on the Drawings for temporary stormwater pollution controls and temporary erosion and sediment controls.

Attachment: SWPPP

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Stormwater Pollution Prevention Plan

Prepared in accordance with NYS DEC General Permit GP-0-25-001

for:

Siwanoy Elementary School Play Yard

Owner/Operator:

Pelham Union Free School District
629 Fifth Avenue
Pelham, NY, 10803

SWPPP Contact:

The LA Group, PC
40 Long Alley
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SWPPP Preparation Date:

November 10, 2026

Table of Contents

1.0 PERMIT OVERVIEW AND REQUIREMENTS 4
1.1 Permit Overview 4
2.0 SWPPP REVIEW, UPDATE 4
2.1 SWPPP Review 4
2.2 SWPPP Updates/Amendments 5
3.0 SITE ASSESSMENT, EVALUATION AND PLANNING 5
3.1 Project Description 5
3.2 Pre-Development Conditions 6
3.3 Project Type 6
4.0 EROSION AND SEDIMENT CONTROL 7
4.1 Erosion and Sediment Control Practices 7
4.2 Erosion and Sediment Control Drawings 7
4.3 Construction Sequence of Operations 7
4.4 Erosion and Sediment Control Practice Maintenance 9
4.5 Erosion and Sediment Control Inspections 9
4.6 Contractor Sequence Form 11
4.7 Spill Prevention Practices 11
4.8 Construction Waste 14
4.9 Offsite Vehicle Tracking 14
4.10 Temporary Stabilization for Frozen Conditions 14
5.0 POST CONSTRUCTION STORMWATER MANAGEMENT DESIGN 15
5.1 Hydraulic and Hydrologic Analysis 16
5.2 NYSDEC Design Criteria 16
5.3 Curve Number and Rainfall Data 16
5.4 Existing Condition 16
5.5 Proposed Condition 17
5.6 Proposed Stormwater Facility 17
5.8 Treatment 17
5.9 Water Quality Volume (WQv) 17
5.10 Runoff Reduction Volume (RRv) 18
5.11 Channel Protection Volume (CPv) 18
5.12 Overbank Flood (Qp) and Extreme Flood (Qf) Attenuation 19
6.0 POST CONSTRUCTION STORMWATER MAINTENANCE 19
6.1 Maintenance to be Performed 19
7.0 CONSTRUCTION WASTE 20
8.0 OFFSITE VEHICLE TRACKING 20
9.0 SOIL RESTORATION 20
10.0 SPILL PREVENTION PRACTICES 21
11.0 CERTIFICATIONS 25
12.0 DEFINITIONS 30

Appendices

A **Notice of Intent (NOI)**

B **Existing Conditions Watershed Map and HydroCAD Calculations**

C **Proposed Conditions Watershed Map and HydroCAD Calculations**

D **Storm Data**

E **NRCS Web Soil Survey and Soil Investigations**

F **Map Set** – Location Map and Construction Drawing

G **SWPPP Inspection Forms** –SWPPP Inspection Report

H **Other SWPPP Forms** – Construction Sequence, SWPPP Plan Changes, Spill Response Form, Stormwater Management Practice Maintenance Log

I **SPDES General Permit GP-0-25-001**

J **Historic Preservation/Endangered Species Documentation**

K **Deep Ripping and De-compaction (DEC, 2008)**

1.0 PERMIT OVERVIEW AND REQUIREMENTS

1.1 Permit Overview

This Stormwater Pollution Prevention Plan (SWPPP) is prepared to inform the landowner and construction personnel of the measures to be implemented for controlling runoff and pollutants from the site during and after construction activities. The objective of this plan is to comply with the New York Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-25-001 requirements. Any material conflicts between this plan and the site plans, specification or instructions, must be brought to the attention of the design professional. The project may have other permits and it is the responsibility of the owner and contractor to know and understand all permits.

The operator will be issued a bill from New York State for a one hundred and ten dollar ($110.00) annual fee for the open GP-0-25-001 permit. The operator will also be billed by New York State for a one time one hundred and ten dollar ($110.00) per acre fee for the proposed disturbed soil area listed in the NOI, and finally a one time six hundred and seventy five ($675.00) per acre fee for the proposed increased impervious area listed in the NOI.

The operator is responsible to maintain onsite in a secure location that is accessible during normal working hours to an individual performing a compliance inspection, the following information:

- ✓ the Notice of Intent (NOI),
- ✓ the NYS Department of Environmental Conservation NOI Acknowledgement Letter,
- ✓ the SWPPP,
- ✓ a copy of the General Permit (included in the SWPPP),
- ✓ MS4 SWPPP Acceptance Form (where applicable), and
- ✓ all inspection reports.

Technical standards are detailed in the “New York State Standards and Specifications for Sediment and Erosion and Sediment Control (November 2016)”, as well as illustrated on the Construction Drawings included in **Appendix F**. The design of post-construction stormwater control practices follows the guidance provided by “New York State Stormwater Management Design Manual.”

2.0 SWPPP REVIEW, UPDATE

2.1 SWPPP Review

Applicable Federal, State, and local regulatory agencies that have jurisdiction may elect to review this SWPPP and notify the permittee in writing that the SWPPP does not meet the requirements of their regulations. If the SWPPP needs to be revised, the permittee and the site contractor will make the required modifications within seven

days of such notification and submit a written certification to the notifying agency that the changes have been implemented. A copy of the SWPPP will be kept available on site for review by regulatory agencies, engineers, and subcontractors.

This Project is for the development of a public school and therefore does not require MS4 approval.

2.2 SWPPP Updates/Amendments

The permittee identified in this SWPPP shall amend the SWPPP under the following conditions:

- ✓ Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharge from the site,
- ✓ Whenever there is a change in design, construction or operation that could have an effect on the discharge of pollutants,
- ✓ To address issues or deficiencies identified during an inspection by the qualified inspector, the Department or other regulatory authority,
- ✓ To identify a new subcontractor that will implement any part of the SWPPP, and
- ✓ To document the final construction conditions.

If modifications are required to the post-stormwater management practices and the Project is within a regulated, traditional land use control MS4, the owner or operator of the Project must notify the MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP. Unless otherwise notified by the MS4, the owner or operator shall have the SWPPP amendments or modifications reviewed and accepted by the MS4 prior to commencing construction of the post-construction stormwater management practice. The SWPPP PLAN CHANGES, AUTHORIZATION, AND CHANGE CERTIFICATION form (Appendix H) must be filled out and a copy retained onsite during construction.

If modifications are required to the post-stormwater management practices and the Project is not within a Regulated, Traditional Land Use Control MS4, the changes shall be documented in the SWPPP kept onsite.

3.0 SITE ASSESSMENT, EVALUATION AND PLANNING

3.1 Project Description

The Project described in this SWPPP is located at 489 Siwanoy Place, in Pelham, NY. This project proposes the construction of a building addition as well as improvements to existing impervious playground areas.

See **Appendix F** for a general site location map and proposed plan.

3.2 Pre-Development Conditions

The proposed area of work is located on moderately sloped terrain with an existing building and paved area with playground space.

3.3 Project Type

This Project is a redevelopment project and has been designed in accordance with Chapter 9 of the 2024 NYSDEC Stormwater Management Design Manual for construction activities. No new impervious area will be introduced via the project, and the existing impervious area will be decreased by 9%.

3.4 Project Scope

The construction of a building addition, paved areas, and play space will disturb approximately 1.36 acres.

3.5 Wetlands, Surface Waters and Hydrology

Surface runoff generally flows towards the northeast and southwest corners of the proposed project area. The runoff eventually discharges into existing stormwater infrastructure.

3.6 Soils

The NRCS Soil Data for the project site consists of urban land-Paxton complex, urban land-Charlton complex, and urban land-Charlton-Chatfield complex, with the majority of soil being urban land-Paxton complex. These soils are consistent with Hydrologic soil group (HSG) D, D, and B, respectively.

A geotechnical report was prepared by GEODesign, dated 3/23/26, that discussed on the on site soils based off of subsurface investigations, including borings, test pits, and infiltration testing. The site geology was evaluated to be a “heterogenous blend of sand, silt, clay, cobbles, and boulders deposited beneath glacier ice.” In addition, several infiltration tests were conducted on site yielding rates of 0.54 inches per hour to 6.23 inches per hour. Per Chapter 7 of Part 630 Hydrology: National Engineering Handbook by the USDA / NRCS, HSG D soils have a “high runoff potential when thoroughly wet. Water movement through the soil is greatly restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures.” The geotechnical evaluation does not support this definition. Group B soils are described as having “moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures.” The description of Group B soils is more representative of actual site conditions and so for the purposes of the stormwater modeling described herein, the site was assumed to have Hydrologic soil group B soils.

The Soils Reports can be found in **Appendix E**.

3.7 Cultural Resources and Natural Heritage Program Determinations

A review of the Cultural Resource Information System (CRIS) shows that a very small area of the Project site is located within an archaeological buffer area. This area will not be significantly impacted by project activities.
The NYSDEC Environmental Resource Mapper shows that this project is not within an area of significant natural communities. The project is proposed at an existing developed area and it is anticipated that there will be no effect on environmental or archeological resources.

Refer to **Appendix J** for correspondence from both NYS OPRHP and NYS DEC.

4.0 EROSION AND SEDIMENT CONTROL

4.1 Erosion and Sediment Control Practices

See the SWPPP plan set for details regarding the Sediment and Erosion Control Practices.

Temporary Structural Practices

- ✓ Silt Fence
- ✓ Stabilized Construction Access

Permanent Structural Controls

- ✓ Stone Outlet Protection

Temporary Stabilization Practices (including vegetative practices)

- ✓ Stabilization shall be initiated by the end of the next business day and be completed within 14 days.

Permanent Stabilization Practices (including vegetative practices)

- ✓ Seed and mulch all disturbed areas. Slopes that are 3:1 or steeper should receive a Rolled Erosion Control Product (RECP), sodding, and or hydro-seeding a homogenous mixture of wood fiber mulch with tackifying agent.

Refer to the SWPPP Plan Set in **Appendix F** for detailed information on each practice.

4.2 Erosion and Sediment Control Drawings

Erosion and Sediment Control measures are included in the SWPPP Plan Set in **Appendix F**.

4.3 Construction Sequence of Operations.

The project will not disturb more than 5 acres.

- ✓ Temporary structural erosion controls will be installed prior to earthwork as per the attached plans.
- ✓ Areas to be undisturbed for more than 7 days will be temporarily stabilized by seeding.
- ✓ Disturbed areas will be reseeded and mulched immediately after final contours are re-established and no more than 7 days after the completion of construction at that site.
- ✓ Temporary erosion control devices will not be removed until the area served is stabilized by the growth of vegetation and the area is certified as being stabilized by the Erosion Control Superintendent.

Construction Activities
Sequence must include major items such as, but not limited to, clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity resulting in soil disturbance. Include installation of erosion and sediment control practices and timing of installation.
Weeks 0-2: Install silt fence and construction entrance
Weeks 1-6: Demolish existing pavement and begin building construction
Weeks 4-Completion: Building Construction
Weeks 6-12: Utility installation
Weeks 10-14: Hardscape and playground surfaces/playground construction
Weeks 14-Completion: Re-establish turf areas via topsoil and seed
Monitor and maintain erosion and sediment control measures upon stabilization of contributing areas

4.4 Erosion and Sediment Control Practice Maintenance

Temporary erosion and sediment control practices shall be maintained frequently during construction. It is the responsibility of the operator to inspect and maintain the temporary controls so that they are working efficiently. The operator shall pay close attention to SWPPP Inspection Reports that advise corrective measures. Captured sediment will have to be removed periodically from each practice for the practice to function properly. Temporary erosion and sediment control practice maintenance needs are listed below:

- ✓ Silt fence – maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.
- ✓ Stabilized construction access – access shall be maintained in a condition which shall prevent tracking. This may require periodic top dressing with additional aggregate. All sediment tracked onto or spilled on public rights of way shall be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance on public rights of way. When washing is required, it shall be done in an area stabilized with aggregate and wash water shall be directed away from streams or wetlands preferably to a broad grassed area or a stormwater pond.
- ✓ Mulch and seed: replace/repair seed and mulch where seeding has been disturbed.
- ✓ Rock outlet protection – once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap. Repair should be immediate.

4.5 Erosion and Sediment Control Inspections

A Trained Contractor is responsible for daily inspections of erosion and sediment control practices to ensure that they are being maintained in effective operating condition at all times.

- A trained contractor shall be an employee from the contracting company responsible for the implementation of the SWPPP. This person must be onsite when any soil disturbing activities are being conducted. The trained contractor must have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified inspector shall receive 4 hours of training every 3 years. This trained contractor cannot conduct the regular SWPPP compliance inspections unless they meet the qualified inspector qualifications.

A Qualified Inspector will perform regular inspections per the schedules below and will be responsible for documenting any deficiencies and the repairs thereof.

- A qualified inspector shall conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the

appropriate erosion and sediment controls described in the SWPPP and required by GP-0-25-001 have been adequately installed to ensure overall preparedness of the site for commencement of construction.

- This qualified inspector must be a Licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received 4 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified inspector shall receive 4 hours of training every 3 years.

- The qualified inspector (as defined by the NYS DEC SPDES regulations) shall make ***at least one inspection every seven (7) calendar days*** of erosion control devices and ongoing soil disturbance activities during construction. When more than five (5) acres of soil is disturbed at any one time the qualified inspector will make at least two inspections every seven (7) calendar days, with each inspection separated by a minimum of two (2) full calendar days

- A maintenance inspection report will be completed by the qualified inspector after each inspection. The report form to be completed by the inspector is attached in **Appendix G.** Reports should be compiled and maintained on-site in the SWPPP 3-ring binder.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, **the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days**.

- For construction sites where soil disturbance activities have been shut down with partial project completion, **the *qualified inspector* may stop conducting inspections**, if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the individual project SWPPP and are operational.

- The qualified inspector shall contact the owner/operator at the conclusion of each inspection and inform the owner/operator that a new inspection report has been placed in the SWPPP. It is the contractor's and the owner/operator's responsibility to address action items identified in the qualified inspector's inspection reports in a timely manner.

- All measures shall be maintained in good working order; if repair is necessary, it shall be initiated within 24 hours of report. The qualified inspector shall take photographs of any needed repairs and also photograph when the repairs are completed. These photographs will be time and date stamped and attached to the weekly inspection report.

- Seeded and planted areas shall be inspected for bare spots, washouts, and healthy growth. If necessary, spot reseeding or sodding shall be implemented.

4.6 Contractor Sequence Form

The contractor shall prepare a summary of construction status using the Construction Sequence Form (included in **Appendix H**) once every month. Significant deviations to the sequence and reasons for those deviations (i.e. weather, subcontractor availability, etc.), shall be noted by the contractor. The schedule shall be used to record the dates for initiation of construction, implementation of erosion control measures, stabilization, etc. A copy of this table shall be maintained at the construction site and updated.

4.7 Spill Prevention Practices

Good Housekeeping and Material Management Practices

The following good housekeeping and material management practices will be followed on site during the construction project to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

- Materials will be brought on site in the minimum quantities required.
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers, and if possible, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposal.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The construction manager or his designee will inspect regularly to ensure proper use and disposal of materials on site.
- The contractor shall prohibit washing of tools, equipment, and machinery in or within 100 feet of any watercourse or wetland.
- All above grade storage tanks are to be protected from vehicle damage by temporary barriers.

Inventory for Pollution Prevention Plan

The materials and substances listed below are expected to be on-site during construction.

- Petroleum for fueling vehicles will be stored in above ground storage tanks. Tanks will either be steel with an enclosure capable of holding 110% of the storage tank volume or of a Con-Store, concrete encased type typically employed by NYSDOT. Hydraulic oil and other oils will be stored in their original containers. Concrete and asphalt will be stored in the original delivery trucks.
- Fertilizer may be stored on site in its original container for a short period of time prior to seeding. Original containers will be safely piled on pallets or similar devices to protect from moisture.
- Paints and other similar materials will be stored in their original containers and all empty containers will be disposed of in accordance with label directions.
- Portable sanitary facilities, which contain chemical disinfectants (deodorants) will be located on-site, with the disinfectants held in the tank of the toilet.

Hazardous Products

These practices are used to reduce the risks associated with hazardous materials.

- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data sheets will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

Spill Prevention

The following product specific practices will be followed on site.

Petroleum Products:

- Construction personnel should be made aware that emergency telephone numbers are located in this SWPPP.
- The contractor shall immediately contact NYSDEC in the event of a spill, and shall take all appropriate steps to contain the spill, including construction of a dike around the spill and placing absorbent material over this spill.
- The contractor shall instruct personnel that spillage of fuels, oils, and similar chemicals must be avoided and will have arranged with a qualified spill remediation company to serve the site.
- Fuels, oils, and chemicals will be stored in appropriate and tightly capped containers. Containers shall not be disposed of on the project site.
- Fuels, oils, chemicals, material, equipment, and sanitary facilities will be stored/located away from trees and at least 100 feet from streams, wells, wet areas, and other environmentally sensitive sites.

- Dispose of chemical containers and surplus chemicals off the project site in accordance with label directions.
- Use tight connections and hoses with appropriate nozzles in all operations involving fuels, lubricating materials or chemicals.
- Use funnels when pouring fuels, lubricating materials or chemicals.
- Refueling and cleaning of construction equipment will take place in parking areas to provide rapid response to emergency situations.
- All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Any vehicle leaking fuel or hydraulic fuel will be immediately scheduled for repairs and use will be discontinued until repairs are made.

Fertilizers:

- Fertilizer will be stored in its original containers on pallets with water resistant coverings.
- Proper delivery scheduling will minimize storage time.
- Any damaged containers will be repaired immediately upon discovery and any released fertilizer recovered to the fullest extent practicable.

Paints:

- All containers will be tightly sealed and stored when not required for use.
- Excess paint will not be discharged to the storm water system or wastewater system, but will be properly disposed of according to manufacturers' instructions or State and local regulations.

Concrete Trucks:

- Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water only at designated locations on site.

Asphalt Trucks:

- Asphalt trucks shall not discharge surplus asphalt on the site.

Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup. The construction manager or site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the onsite construction office or trailer.

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies. Any spill in excess or suspected to be in excess of two gallons will be reported to the NYSDEC Regional Spill Response Unit. Notification to the NYSDEC (1-800-457-7362) must be completed within two hours of the discovery of the spill.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to absorbent pads, brooms, dust pans, mops, rags, gloves, goggles, activated clay, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with spilled substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.

4.8 Construction Waste

Waste Materials: All waste materials generated during construction will be disposed at a suitable landfill, or transfer station.

Hazardous Waste: The project will not be a generator of hazardous waste and it is not anticipated that any hazardous waste will be generated during construction. If there are any materials generated, a licensed hazardous waste carrier will be contracted to dispose the hazardous material at a suitable disposal site. If hazardous materials are discovered during construction, the work will be stopped until the issue is resolved.

Waste: Portable sanitary facilities will be made available to construction personnel and will be serviced regularly.

4.9 Offsite Vehicle Tracking

Excavation equipment involved with the construction will remain on the project site and will not regularly egress or ingress the site. Any trucks used to bring in materials or remove materials via municipal paved roads will do so over a stabilized construction entrance. If any off-site vehicle tracking occurs, the contractor will be directed to initiate, street sweeping program in the immediate vicinity of the site.

4.10 Temporary Stabilization for Frozen Conditions

The following temporary stabilization measures **MUST** be performed when construction is occurring during winter/frozen ground conditions. The following requirements do not supercede any other requirements of this SWPPP as they apply to non-frozen ground conditions.

- Perimeter erosion control **MUST** still be installed prior to earthwork disturbance as per this SWPPP.
- Any areas that cannot be seeded to turf by October 1 or earlier will receive a temporary seeding. The temporary seeding will consist of winter rye seeded at the rate of 120 pounds per acre (2.5 pounds per 1,000 square feet) or stabilized as per the temporary stabilization for winter construction/frozen conditions.
- Any area of disturbance that will remain inactive for a period of 14 consecutive days **MUST** be mulched. This includes any previously disturbed areas that are covered with snow.
- Mulch **MUST** consist of loose straw applied at the rate of 2 to 3 bales (90 to 100 pounds) per thousand square feet.
- Mulch **MUST** be applied uniformly over the area of bare soil or bare soil that is covered with snow. For the latter condition, mulch **MUST** be applied on top of snow.
- Using a tracked vehicle, mulch **MUST** be crimped into the bare soil/snow. The tracked vehicle **MUST** be driven across the mulched areas in at least two directions to maximize crimping of mulch into the soil/snow.
- If mulch gets blown off an area to a significant degree, the site inspector **WILL** require that an area be re-mulched in accordance with Items 2 through 5 above, and this area **WILL** be included on the inspection checklist for the next inspection.
- If a particular area repeatedly experiences loss of mulch due to wind, then the inspector **WILL** require that an alternative method be used to secure the mulch in place. Such alternatives may include the use of netting, tackifier or other methods deemed appropriate by the inspector.
- During periods when snow is melting and/or surface soils are thawing during daytime hours, mulched areas **MUST** be re-tracked (crimped) as per Item 5 above at least once every seven days, more frequently if directed by the inspector. Additional mulch may be required to obtain complete coverage of an area. Biodegradable erosion control matting may be required on steeper slopes.
- Additional stabilization measures for non-frozen ground conditions described in this SWPPP **WILL** be implemented at the time deemed appropriate by the inspector.

During the winter season, if a site has been stabilized and soil disturbing activities have been suspended for the winter, weekly inspections can be suspended. However, monthly inspections must still be conducted. All normal weekly inspections must resume when soil disturbing activities resume.

5.0 POST CONSTRUCTION STORMWATER MANAGEMENT DESIGN

5.1 Hydraulic and Hydrologic Analysis

The program utilized for quantifying stormwater runoff rates and volumes was ***HydroCAD*** software, produced by Applied Microcomputer Systems of Chocorua, NH. USDA NRCS TR20 extreme precipitation data was used to determine the rainfall distribution curves and ultimately the design storms for 1, 10, and 100-year frequency rainfall were analyzed.

- ✓ Hydrologic/hydraulic analysis for all structural components of the stormwater control system for the applicable design storms (see **Appendix B And C**).
- ✓ Comparison of post-development stormwater runoff conditions with pre-development conditions (see **Appendix B and C**).
- ✓ Dimensions, material specifications and installation details for each post-construction stormwater control practice (see **Appendix F**).

5.2 NYSDEC Design Criteria

The New York State Stormwater Management Design Manual dated July 2024 (The Manual) has been utilized to develop the stormwater management plan.

Appendix D contains detailed calculations for determining and summarizing the required and provided volumes for Water Quality. In general, WQv was calculated for all areas where site disturbance or green infrastructure techniques are proposed.

5.3 Curve Number and Rainfall Data

The surface cover for the project area is a mixture of grass, woods, and impervious areas. The curve numbers utilized in the modeling were assigned based on cover type and HSG soil classification.

The design storms used for pre-development versus post-development comparison were the 1, 10, and 100-year, 24-hour duration, USDA NRCS TR20 extreme precipitation events. The rainfall amounts for these storms, according to NRCC and NRCS, are 2.85, 5.09, and 8.96 inches, respectively.

5.4 Existing Condition

The Project area's existing condition, for which this stormwater management plan is based, consists of grass, paved areas, and an existing building. Under the watershed's Existing Condition, the majority of site runoff flows northeast and southwest as sheet flow through the site, eventually making its way into existing stormwater infrastructure. Runoff exits the site to the southwest and northeast and are used as analysis points. These points have been labeled Analysis Point 1 (AP-1) and Analysis Point 2 (AP-2) respectively. For the purposes of this study AP-1 and AP-2 were utilized in comparing all pre- versus post-runoff conditions.

Refer to drawing "W-1 Existing Conditions Watershed Map," located in **Appendix B** for more information and existing conditions watershed modeling.

5.5 Proposed Condition

In the proposed condition, all stormwater from the Project area will continue to discharge to the same points as in the Existing Condition (AP-1 and AP-2). The flow patterns through the watershed have roughly remained unchanged, as is shown on the drawing "W-2 Proposed Conditions Watershed Map" contained in **Appendix C**. To meet NYSDEC requirements (see Section 5.2 NYSDEC Design Criteria of this report) underground detention piping was incorporated into the stormwater management design to mitigate the quantity of stormwater runoff discharged from the Project Site.

5.6 Proposed Stormwater Facility

The Project is proposing the construction of a hydrodynamic separator (HS-1). The stormwater management facilities are indicated on the watershed map (W2) and construction plans.

5.7 Treatment

Treatment for the water discharging into HS-1 is provided via the swirl chamber. HS-1 is sized to treat 0.068 ac-ft which is more than the required WQv.

5.8 Water Quality Volume (WQv)

The Water Quality Volume (WQv) requirement is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volumes. The WQv is directly related to the amount of impervious cover created at a site. The following equation is used to determine the water quality storage volume.

$$WQv = \frac{(P)(Rv)(A)}{12}$$

Where:

WQv = Water quality volume (acre/feet)
P = 90% Rainfall Event (1.50" for Pelham)
Rv = 0.05 + 0.009(I) where I is percent impervious cover
A = Site area in acres

The project proposes the use of alternative practices to treat redevelopment area, thus the required WQv to be treated is calculated using the following equation for a combination of impervious area reduction and alternative practice.

$$60\%ALT = [25 - (5\% IC_{RED} + 0\%SMP + 0\%RR)] * 3$$

Where:
%ALT = Percent of redevelopment impervious area treated by alternative SMPs
$\%IC_{RED}$= Percent reduction in existing disturbed impervious area

%SMP = percent of redevelopment impervious area treated by standard SMPs
%RR = Percent of redevelopment impervious area treated by runoff reduction techniques

The required WQv will be provided by a hydrodynamic separator in accordance with the SWMDM. The total required WQv for the project is 0.062 ac-ft. Refer to Table 5-1 for a summary of the provided water quality volumes for the Project.

Refer to **Appendix D** for detailed WQv calculations.

Table 5-1
Water Quality Volume (WQv) Summary

SMP	Type	Provided
		(ac-ft)
HS-1	Hydrodynamic Separator	0.064
TOTAL		**0.064**

5.9 Runoff Reduction Volume (RRv)

Section 9.2.1.B of the manual states that “meeting the RRv sizing criteria is not required for the redevelopment activity portion of the project”. As the project is redevelopment, the RRv component is waived.

5.10 Channel Protection Volume (CPv)

Section 9.2.1.C of the manual states that “If the hydrology and hydraulic analysis for the project site shows that the post construction 1-year 24-hour discharge rate and volume are less than or equal to the pre-construction 1-year 24-hour discharge rate and volume, providing 24-hour detention of the 1-year storm to meet the channel protection criteria is not required”.
As shown in **Table 5-2**, this requirement has been met and therefore the Channel Protection Volume (CPv) is waived.

Table 5-2
CPv Summary 1-Year Storm

Pre-Development		Post-Development	
Volume	Discharge Rate	Volume	Discharge Rate
10092 CF	3.17 CFS	9305 CF	2.71 CFS

5.11 Overbank Flood (Qp) and Extreme Flood (Qf) Attenuation

The primary purpose of the Overbank Flood (Qp) control sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. It requires attenuation of the 10-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition.

The intent of the Extreme Flood (Qf) criteria is to (a) prevent the increased risk of flood damage from large storm events, (b) maintain the boundaries of the pre-development 100-year floodplain, and (c) protect the physical integrity of stormwater management practices. It requires storage and attenuation of the 100-year, 24-hour storm to ensure post-development peak discharge rates do not exceed the pre-development condition.

During the 10-year and 100-year 24-hour storm the post-development peak discharge rates do not exceed the pre-development rates. See Table 5-3 of this Report for a comparison of pre- and post-development peak rates.

Table 5-3 below provides a summary of the existing conditions versus proposed conditions Qp and Qf attenuation for the Project's watershed.

Table 5-3
Existing Conditions Versus Proposed Conditions Qp and Qf Attenuation

	AP-1		AP-2	
	Pre	Post	Pre	Post
10 year, 24 hour storm (Qp)	1.01 CFS	0.33 CFS	4.50 CFS	4.32 CFS
100 year, 24 hour storm (Qf)	1.67 CFS	0.53 CFS	7.57 CFS	6.78 CFS

6.0 POST CONSTRUCTION STORMWATER MAINTENANCE

6.1 Maintenance to be Performed

Pelham Union Free School District will be responsible for long-term maintenance of all post construction stormwater management facilities. Post construction stormwater management controls are shown on Construction Drawings included in **Appendix F**.

Post-construction maintenance for this project will consist of regular inspections of permanent stormwater management facilities. These maintenance procedures are essential to assure continual performance of the stormwater management practices on your site. During the inspection and any maintenance activity to the stormwater management practices, the responsible party should fill out an inspection and maintenance log to record that it was done. Specific procedures are as follows.

Detention Piping

- The systems should be inspected quarterly for the first year and if there are no problems, the system can be inspected annually after the first year.
- If sediment is accumulating on the bottom of the system, pump in water via a flushing port or observation well and then pump the sediment laden water out via the flushing port or the inlet. This can be done with a vacuum truck. The system may have to be flushed multiple times until it is clean of sediment.
- The manifold feeding the pipe storage should be flushed by pumping water in the manhole access and out the flushing port. This should be done during the routine inspection.

Hydrodynamic Separator

- Inspections of the separator must be completed at a minimum of twice a year (Site specific maintenance frequency should be established during the first two or three years or operation)
- Maintenance shall be performed if any internal components are broken or missing, inlet or outlet is obstructed or if the accumulation of trash, debris and/or oil in the baffled chambers around the vortex is significant. All maintenance shall be completed during dry weather when no flow is entering the system.

7.0 CONSTRUCTION WASTE

Waste Materials: All waste materials generated during construction shall be disposed of at a suitable landfill or transfer station.

Hazardous Waste: The project will not be a generator of hazardous waste and it is not anticipated that any hazardous waste will be generated during construction. If there are any materials generated, a licensed hazardous waste carrier will be contracted to dispose the hazardous material at a suitable disposal site. If hazardous materials are discovered during construction, the work will be stopped until the issue is resolved.

Waste: Portable sanitary facilities shall be made available to construction personnel and will be serviced regularly.

8.0 OFFSITE VEHICLE TRACKING

If any off-site vehicle tracking occurs, the contractor will be directed to initiate street sweeping program in the immediate vicinity of the site.

9.0 SOIL RESTORATION

Excessively compacted areas and areas of cut and fill on the Project Site shall have soil restoration performed as needed. Attached in **Appendix K** is “Deep Ripping and De-compaction, (DEC 2008).” The methodology in this document should be followed for specific soil restoration measures, performed in accordance with the Table below:

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
Minimal Soil Disturbance	Restoration not permitted		Preservation of Natural Features
Areas where topsoil is stripped only-no change in grade	Restoration not required		Clearing and Grubbing
Areas of cut and fill	HSG A& B	HSG C & D	
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Heavy traffic areas onsite (especially in a zone 5-25 feet around buildings, but not within a 5 foot perimeter around foundation walls)	HSG A& B	HSG C & D	
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration**	
Areas where Runoff Reduction and/or infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area.

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler

**Per "Deep Ripping and Decopmpaction, DEC 2008"

- If compost amendment is required, 2 to 4 inches of screened compost shall be incorporated into the soil.
- Prior to application of the deep-ripping and de-compaction, the depth to bedrock or naturally occurring hardpan should be known so that the depth of tillage be adjusted according to those restrictive depths.
- Soils with a slope that exceeds 10% shall not have full soil restoration with deep-ripping and de-compaction due to potential for erosion from tilled soil.
- Any soil tillage (deep or shallow) shall not be done on soils that are excessively wet, as this will damage the soil.
- Any tillage shall not be done within approximately 10’ of the drip-line of any existing established trees.
- Any large stones that are unearthed during tillage should be removed from the surface prior to final surface preparation and vegetation establishment.

10.0 SPILL PREVENTION PRACTICES

Good Housekeeping and Material Management Practices

The following good housekeeping and material management practices shall be followed on site during the construction project to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

- Materials shall be brought on site in the minimum quantities required.

- All materials stored on site shall be stored in a neat, orderly manner in their appropriate containers, and if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.
- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposal.
- Manufacturer's recommendations for proper use and disposal shall be followed.
- The construction manager or his designee shall inspect regularly to ensure proper use and disposal of materials on site.
- The contractor shall prohibit washing of tools, equipment, and machinery in or within 100 feet of any watercourse or wetland.
- All above grade storage tanks are to be protected from vehicle damage by temporary barriers.

Inventory for Pollution Prevention Plan

The materials and substances listed below are expected to be on-site during construction.

- Petroleum for fueling vehicles will be stored in above ground storage tanks. Tanks will either be steel with an enclosure capable of holding 110% of the storage tank volume or of a Con-Store, concrete encased type typically employed by NYSDOT. Hydraulic oil and other oils will be stored in their original containers. Concrete and asphalt will be stored in the original delivery trucks.
- Fertilizer may be stored on site in its original container for a short period of time prior to seeding. Original containers will be safely piled on pallets or similar devices to protect from moisture.
- Paints and other similar materials will be stored in their original containers and all empty containers will be disposed of in accordance with label directions.
- Portable sanitary facilities, which contain chemical disinfectants (deodorants) will be located on-site, with the disinfectants held in the tank of the toilet.

Hazardous Products

These practices are used to reduce the risks associated with hazardous materials.

- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data sheets will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

Spill Prevention

The following product specific practices will be followed on site.

Petroleum Products:

- Construction personnel should be made aware that emergency telephone numbers are located in this SWPPP.
- The contractor shall immediately contact NYSDEC in the event of a spill, and shall take all appropriate steps to contain the spill, including construction of a dike around the spill and placing absorbent material over this spill.
- The contractor shall instruct personnel that spillage of fuels, oils, and similar chemicals must be avoided and will have arranged with a qualified spill remediation company to serve the site.
- Fuels, oils, and chemicals will be stored in appropriate and tightly capped containers. Containers shall not be disposed of on the project site.
- Fuels, oils, chemicals, material, equipment, and sanitary facilities will be stored/located away from trees and at least 100 feet from streams, wells, wet areas, and other environmentally sensitive sites.
- Dispose of chemical containers and surplus chemicals off the project site in accordance with label directions.
- Use tight connections and hoses with appropriate nozzles in all operations involving fuels, lubricating materials or chemicals.
- Use funnels when pouring fuels, lubricating materials or chemicals.
- Refueling and cleaning of construction equipment will take place in parking areas to provide rapid response to emergency situations.
- All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Any vehicle leaking fuel or hydraulic fuel will be immediately scheduled for repairs and use will be discontinued until repairs are made.

Fertilizers:

- Fertilizer will be stored in its original containers on pallets with water resistant coverings.
- Proper delivery scheduling will minimize storage time.
- Any damaged containers will be repaired immediately upon discovery and any released fertilizer recovered to the fullest extent practicable.

Paints:

- No paints will be used therefore this is not applicable.

Concrete:

- Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water only in concrete washout containment structures at designated locations on site.

Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup. The construction manager responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the onsite construction office or trailer.

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Petroleum spills must be reported to DEC unless they meet all the following criteria:
    - The spill is known to be less than 5 gallons; and
    - The spill is contained and under the control of the spiller; and
    - The spill has not and will not reach the State's water or any land; and
    - The spill is cleaned up within 2 hours of discovery.
- All reportable petroleum spills and most hazardous materials spills must be reported to DEC hotline (1-800-457-7362) within New York State; and (1-518 457-7362) from outside New York State. For spills not deemed reportable, it is strongly recommended that the facts concerning the incident be documented by the spiller and a record maintained for one year.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to absorbent pads, brooms, dust pans, mops, rags, gloves, goggles, activated clay, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with spilled substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size

11.0 CERTIFICATIONS

Preparer Certification of Compliance with Federal, State, and Local Regulations

This Stormwater Pollution Prevention Plan was prepared in accordance with the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-25-001), pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law. This SPDES General Permit implements the Federal Clean Water Act pertaining to stormwater discharges.

Name: _____ Title: _____

Signature: _____ Date: _____

Company Name: The LA Group, PC

Owner Pollution Prevention Plan Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who are directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

I understand that GP-0-25-001 requires site inspections be conducted by a qualified professional once every seven (7) days and when approved in writing by the NYSDEC, disturbances of greater than five (5) acres at one time require site inspections two (2) times every seven (7) days. These inspections shall be performed by a qualified professional as defined by the General Permit.

The Owner/Operator will be held financially responsible for any and all fines related to work tasks that are not specified by the Contractor(s)/Subcontractor(s) below.

Name: _____ Title: Owner/Operator

Signature: _____ Date: _____

Company Name: _____

Contractor and Subcontractor Certification

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the permittee must comply with the terms and conditions of the SPDES permit specific to the individual project site and that it is unlawful for any person to cause or contribute to a violation of water quality standards. A person is guilty of making a punishable false written statement when he knowingly makes a false statement, which he does not believe to be true, in a written instrument bearing a legally authorized form notice to the effect that false statements made therein are punishable. Making a punishable false written statement is a class A misdemeanor.

Name _____ Title _____

Signature _____ Date _____

Company Name _____
Address _____
City, State, Zip _____
Phone Number _____

SWPPP Components You Are Responsible For

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Name of Trained Individual Responsible for SWPPP Implementation _____ Title _____

Signature of Trained Individual Responsible for SWPPP Implementation _____ Date _____

Contractor and Subcontractor Certification

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the permittee must comply with the terms and conditions of the SPDES permit specific to the individual project site and that it is unlawful for any person to cause or contribute to a violation of water quality standards. A person is guilty of making a punishable false written statement when he knowingly makes a false statement, which he does not believe to be true, in a written instrument bearing a legally authorized form notice to the effect that false statements made therein are punishable. Making a punishable false written statement is a class A misdemeanor.

Name _____ Title _____

Signature _____ Date _____

Company Name _____
Address _____
City, State, Zip _____
Phone Number _____

SWPPP Components You Are Responsible For

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Name of Trained Individual Responsible for SWPPP Implementation _____ Title _____

Signature of Trained Individual Responsible for SWPPP Implementation _____ Date _____

Contractor and Subcontractor Certification

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the permittee must comply with the terms and conditions of the SPDES permit specific to the individual project site and that it is unlawful for any person to cause or contribute to a violation of water quality standards. A person is guilty of making a punishable false written statement when he knowingly makes a false statement, which he does not believe to be true, in a written instrument bearing a legally authorized form notice to the effect that false statements made therein are punishable. Making a punishable false written statement is a class A misdemeanor.

Name _____ Title _____

Signature _____ Date _____

Company Name _____
Address _____
City, State, Zip _____
Phone Number _____

SWPPP Components You Are Responsible For

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Name of Trained Individual Responsible for SWPPP Implementation _____ Title _____

Signature of Trained Individual Responsible for SWPPP Implementation _____ Date _____

Contractor and Subcontractor Certification

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the permittee must comply with the terms and conditions of the SPDES permit specific to the individual project site and that it is unlawful for any person to cause or contribute to a violation of water quality standards. A person is guilty of making a punishable false written statement when he knowingly makes a false statement, which he does not believe to be true, in a written instrument bearing a legally authorized form notice to the effect that false statements made therein are punishable. Making a punishable false written statement is a class A misdemeanor.

Name _____ Title _____

Signature _____ Date _____

Company Name _____
Address _____
City, State, Zip _____
Phone Number _____

SWPPP Components You Are Responsible For

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Name of Trained Individual Responsible for SWPPP Implementation _____ Title _____

Signature of Trained Individual Responsible for SWPPP Implementation _____ Date _____

12.0 DEFINITIONS

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition, or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, tree removal, stump removal and/or brush removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Phasing Plan - a plan designed to construct particular portions of an individual project at different times. Phasing is often used when a project is very large to limit the disturbance at a single time to 5 acres per phase.

Erosion and Sediment Control Practices – temporary measures installed prior to construction and maintained during construction to temporarily treat any stormwater runoff. Once construction is completed and post-construction stormwater management practices are installed and the site is stabilized, the erosion and sediment control practices are removed from the site.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete pavement.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and compacted gravel surfaces (i.e. parking lots, driveways, roads, runways, and sidewalks); building rooftops, and miscellaneous impermeable structures such as patios, pools, and sheds.

Owner or Operator – means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Post-Construction Stormwater Management Practices – permanent devices constructed or installed onsite to treat stormwater from a site when construction is completed.

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).
It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment

control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the Qualified Professional qualifications in addition to the Qualified Inspector qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

State Pollutant Discharge Elimination System (SPDES) – means the system established pursuant to Article 17 of the Environmental Conservation Law (ECL) and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Stormwater Pollution Prevention Plan (SWPPP) - means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the construction site; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the permittee will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean, within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800-941.

Temporary Stabilization – means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Trained Contractor – means an employee from a contracting (construction) company responsible for the day to day implementation of the SWPPP. The trained contractor must have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the qualified inspector shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company that meets the qualified inspector qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The trained contractor is responsible for the day-to-day implementation of the SWPPP.

Appendix A

Notice of Intent (NOI)

Construction General Permit (CGP)
Electronic Notice of Intent (eNOI)
GP-0-25-001

version 1.18

(Submission #: HQP-YGXW-EK4BE, version 1)

Details

Originally Started By	Dana Schmid
Alternate Identifier	Siwanoy Elementary School Play Yard—Region 3
Submission ID	HQP-YGXW-EK4BE
Status	Draft

Form Input

Eligibility

Disturbance Threshold

1. Will the construction activity involve soil disturbances listed in Part I.A.1 of GP-0-25-001?
Yes

1.a. Will any runoff from the site enter a sewer system classified as a combined sewer?
No

1.b. Is this a remediation project being done under a Department approved work plan (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) with a SWPPP which meets the substantive requirements of GP-0-25-001?
No

1.c. Is the construction activity related to a stormwater discharge that does not require a permit as described in 40 CFR 122.3(e), e.g. non-point source agriculture or silviculture activities?
No

Other SPDES Permits

2. Will the discharge from the construction activity meet all conditions listed in Part I.A.2 of GP-0-25-001?
Yes

Threatened and Endangered Species

3. Will the construction activity potentially adversely affect a species that is endangered or threatened per Part I.A.3.?
No

State Historic Preservation Act (SHPA)

4. Is the construction activity designated by the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP), pursuant to 9 NYCRR §§428.12 or 428.13 as exempt from the SHPA review (see Attachment 2 of the Letter of Resolution between NYSDEC and OPRHP, dated January 9, 2015)?
No

4.a. Will the construction activity:

a) occur within an archeologically sensitive area indicated on the sensitivity map, or

b) have the potential to affect a property that is listed or determined to be eligible for listing on the National or State Registers of Historic Places, or

c) include a new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old and OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined is a historically/archeologically significant building, structure, or object:

- 1-5 acres of disturbance—20 feet
- 5-20 acres of disturbance—50 feet
- 20+ acres of disturbance—100 feet?

Yes

4.a.i. Have the impacts to historic properties been resolved?
Yes

4.a.i.1. Which of the following documentation will be maintained at the construction site?
a) DEC consultation form sent to OPRHP and copied to the NYSDEC Agency Historic Preservation Officer (APO)

and,
the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution

State Environmental Quality Review (SEQR)

5. Is the construction activity subject to SEQR (Part I.A.5.), or the equivalent environmental review from another NYS or federal agency (Part I.A.6.)?
Yes

5.a. Has the owner/operator obtained documentation that the project review pursuant to SEQR, or the equivalent, has been satisfied per Part I.A.5. or I.A.6. of GP-0-25-001?
Yes

Uniform Procedures Act (UPA) Permits

6. Has the owner/operator obtained all necessary UPA permits from NYSDEC, or the equivalent from another NYS or federal agency per Part I.A.7.a. of GP-0-25-001? Select "Yes" if no UPA permits, or the equivalent, are required for this construction activity.
Yes

Steep Slope

7. Is the construction activity within the watershed of surface waters of the State classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website?
No

Owner/Operator Information

8. Owner/Operator Name
Pelham Union Free School District

9. Owner/Operator Contact Person Information

First and Last Name	Phone	E-mail
Cheryl H. Champ	9147383434	cchamp@pelhamschools.org

10. Owner/Operator Mailing Address
629 Fifth Avenue
Pelham, NY 10803
USA

11. Is the billing contact different from the Owner/Operator Contact?
No

12. What type of organization is the owner/operator?
School District

Site Information

13. Project/Site Name
Siwanoy Elementary School Play Yard

14. Site Address

489 Siwanoy Place
Pelham, NY 10803
Westchester

DEC Region
3

15. Site Latitude & Longitude
40.8984009,-73.8090946

Project Details

16. This eNOI submission is for:
A construction activity not part of a common plan of development or sale in accordance with Part I.D.1.a.

17. Does the project type fall under Table 1 or Table 2 of Appendix B of GP-0-25-001? If any portion of the construction activity falls under Table 2, regardless of the size of the disturbance, select "Table 2".
Table 2

18. Consistent with Part III.B.1.c.i. of GP-0-25-001, provide a concise overview of the project. Describe existing and proposed conditions, and include any other relevant information.
The project concerns the construction of a building addition and improvement to existing play area. Existing conditions include a school building and a large impervious area with play structures. Proposed conditions will include an addition to the building as well as improvements to the impervious play space that will reduce overall impervious area onsite.

Enter the total project site acreage, the acreage to be disturbed, and the future impervious area (acreage) within the disturbed area, rounded to the nearest tenth of an acre.

19. Total Site Area (acres)
2.3

20. Total Area to be Disturbed (acres)
1.3

21. Existing Impervious Area to be Disturbed (acres)
1.0

22. Future Impervious Area Within Disturbed Area (acres)
0.9

Nature of the project:
Redevelopment with no increase in impervious area

23. Do you plan to disturb more than 5 acres of soil at any one time?
No

24. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
5

C (%)
0

D (%)
95

25. Enter the planned start and end dates of the disturbance activities.

Start Date
06/15/2027

End Date
09/01/2027

26. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Hutchinson River, Lower, and tribs - 1702-0003

27. Type of waterbody identified in question 26?
River Off Site

28. Has the surface waterbody in question 26 been identified as a 303(d) segment in Appendix D of GP-0-25-001?
No

29. Is this project located in one of the Watersheds identified in Appendix C of GP-0-25-001?
No

30. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

31. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

31.a. What is the name of the municipality/entity that owns the separate storm sewer system? If the separate sewer system is owned by an MS4 Operator, enter the MS4 Operator name.
New York-Newark

32. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

33. Is this property owned by a state authority, state agency, federal government or local government?
Yes

Required SWPPP Components

General SWPPP Requirements

34. Has a SWPPP been developed in conformance with the requirements in Part III. of GP-0-25-001?
Yes

35. Does the SWPPP demonstrate consideration of the future physical risks due to climate change pursuant to the CRRA, 6 NYCRR Part 490, and associated guidance per Part III.A.2. of GP-0-25-001?
Yes

36. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

37. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the NYS Stormwater Management Design Manual?
Yes

37.a. Which version of the NYS Stormwater Management Design Manual was used to develop the SWPPP?
2024

38. Has the post-construction stormwater management practice component of the SWPPP been developed by a qualified professional per Part III.A.4.?
Yes

SWPPP Preparer

39. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

40. Name of the person who prepared the SWPPP
Douglas Heller

41. SWPPP Preparer Organization Name
The LA Group

42. SWPPP Preparer Contact Information

First and Last Name	Phone	E-mail
Douglas Heller	5185878100	dheller@thelagroup.com

43. SWPPP Preparer Address

40 Long Alley

Saratoga Springs, NY 12866

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Upload the completed form

Download SWPPP Preparer Certification Form

44. Please upload the SWPPP Preparer Certification

NONE PROVIDED

Comment

NONE PROVIDED

44.a. Has the SWPPP Preparer Certification Form been signed by the SWPPP preparer in accordance with Part VII.J of GP-0-25-001?

Yes

Erosion & Sediment Control Criteria

45. Has a construction sequence schedule for the planned management practices been prepared?

Yes

Post-Construction Criteria

Site Planning and Soil Restoration

46. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

Preservation of Undisturbed Area
Reduction of Clearing and Grading
Preservation of Buffers

47. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6 ("Soil Restoration") of the Design Manual.

All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

Water Quality Criteria

48. Is the reduction in impervious area greater than 25%?

No

49. Water Quality Sizing Criteria

Total WQv required (acre-feet)	Total RRv provided (acre-feet)	Minimum RRv (acre-feet)	Total WQv provided (acre-feet)	Sum of RRv and WQv provided
0.062	*NONE PROVIDED*	0	0.064	NaN

Water Quantity Criteria

50. Per Section 9.2.1.C.VI and VII of the 2024 Design Manual, is there 0% change to hydrology that increases the discharge rate and volume from the project site?
No

51. Does one of the waiver conditions apply to the channel protection for this construction activity?
Yes

51.a. The need to provide channel protection has been waived because:
The 1-year post-development peak discharge is less than or equal to 2.0 cfs without detention or velocity controls.

52. Does one of the waiver conditions apply to the Qp and Qf for this construction activity?
No

Overbank Flood Control Criteria (Qp)

52.b.i. Pre-Development (CFS)
5.51

52.b.ii. Post-Development (CFS)
4.65

Total Extreme Flood Control Criteria (Qf)

52.b.iii. Pre-Development (CFS)
9.24

52.b.iv. Post-Development (CFS)
7.31

Operation and Maintenance

53. Has a long-term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

53.a. Identify the entity responsible for the long-term Operation and Maintenance.
Pelham Union Free School District

Post-Construction SMP Identification

54. Post-Construction RR Techniques and Standard SMPs

RR Techniques and SMPs	Contributing Impervious Area (acres)	Total Contributing Area (acres)
Alternative SMPs Only		

55. Alternative SMPs

Type of Alternative SMP	Manufacturer of the Alternative SMP	Name of the Alternative SMP	Contributing Impervious Area (acres)
Hydrodynamic	*NONE PROVIDED*	*NONE PROVIDED*	0.5655

Other Permits

56. Identify other permits, existing and new, that are required for this project/facility.
None

57. Is this NOI for a change in owner/operator per Part I.G.?
No

MS4 SWPPP Acceptance

59. Will the construction activities be within the municipal boundary(ies) of Traditional Land Use Control MS4 Operator(s) and discharge to the MS4(s)?
Yes

59.a. Which form is required per Part I.D.2.b.ii.?
MS4 No Jurisdiction Form

MS4 No Jurisdiction Form Download

Download the MS4 No Jurisdiction Form from the link below.
MS4 No Jurisdiction Form

60. MS4 Acceptance or No Jurisdiction Form Upload

NONE PROVIDED

Comment

NONE PROVIDED

60.a. Has the form been signed by the principal executive officer or ranking elected official—or duly authorized representative of that person—in accordance with Part VII.J. and submitted along with this NOI?
Yes

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the Owner/Operator Certification Form by clicking the link below.
Owner/Operator Certification Form

61. Upload Owner/Operator Certification Form

NONE PROVIDED

Comment

NONE PROVIDED

61.a. Has the Owner/Operator Certification Form from Appendix J been signed by the owner/operator, or a representative of the owner/operator in accordance with Part VII.J of GP-0-25-001 and uploaded to the eNOI?

Yes

Additional Project Information

62. Enter any additional pertinent project information in the text box below.

Project will be publicly bid so a specific make/model for a hydrodynamic separator cannot be supplied. Product specified will satisfy requirements of NYSDEC for hydrodynamic separators.

Appendix B

Existing Conditions Watershed Map and HydroCAD Calculations

Appendix C

Proposed Condition Watershed Map and HydroCAD Calculations

Appendix D

Storm Data

Appendix E

Resource Mapping and Soils Data

Appendix F

Map Set

Appendix G

SWPPP Inspection Form

Siwanoy Elementary School Play Yard
WEEKLY SWPPP INSPECTION REPORT

Inspector Name:	Date:
Signature (required):	Time:
Weather:	Inspection #:
Soil Conditions (dry, saturated, etc):	

Note: Digital photos, with date stamp required for all practices requiring corrective action, before and after, to be attached to the inspection report.

	YES	NO	N/A		
1.	☐	☐	☐	Routine Inspection.	Date of last inspection:_____
2.	☐	☐	☐	Inspection following rain event.	Date/time of storm ending:_____ Rainfall amount:_____ Recorded by:_____
3.	☐	☐	☐	Is this a final site inspection?	
4.	☐	☐	☐	Has site undergone final stabilization?	
	☐	☐	☐	If so, have all temporary erosion and sediment controls been removed?	

Site Disturbance (Indicate Locations on Plan)

	YES	NO	N/A	
1.	☐	☐	☐	Areas previously disturbed, but have not undergone active site work in the last 7 days?
2.	☐	☐	☐	Areas disturbed within last 7 days?
3.	☐	☐	☐	Areas expected to be disturbed in next 7 days?
4.	☐	☐	☐	Do areas of steep slopes or complex stabilization issues exist? If "YES" explain:
5.	☐	☐	☐	Are there currently more than 5 acres of disturbed soil at the site? If so make sure there is an approval letter from NYS DEC.

Additional Comments:_____

Inspection of Erosion and Sediment Control Devices

	Type of Control Device	Accumulation (if any) in %	Repairs/Maintenance Needed
1.			
2.			
3.			
4.			
5.			
6.			

Stabilization/Runoff

	YES	NO	N/A	
1.	☐	☐	☐	Are all existing disturbed areas contained by control devices? Type of devices:
2.	☐	☐	☐	Are there areas that require stabilization within the next 7 days? Specify Area:
3.	☐	☐	☐	Have stabilization measures been initiated in inactive areas?
4.	☐	☐	☐	Is there current snow cover or frozen ground conditions?
5.	☐	☐	☐	Rills or gullies?
6.	☐	☐	☐	Slumping/deposition?
7.	☐	☐	☐	Loss of vegetation?
8.	☐	☐	☐	Lack of germination?
9.	☐	☐	☐	Loss of mulching?

Receiving Structures/Water Bodies (Indicate locations where runoff leaves the project site on the site plan)

	YES	NO	N/A	
1.	☐	☐	☐	Surface water swale or natural surface waterbody?

If natural waterbody:

Is waterbody located ☐ onsite, or ☐ adjacent to property boundary?

Description of condition:_____

2.	☐	☐	☐	Municipal or community system?

Inspect locations where runoff from project site enters the receiving waters and indicate if there is evidence of:

a.	☐	☐	☐	Rills or gullies?
b.	☐	☐	☐	Slumping/deposition?
c.	☐	☐	☐	Loss of vegetation?
d.	☐	☐	☐	Undermining of structures?
e.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?
f.	☐	☐	☐	Is there evidence of turbidity, sedimentation, or oil in the receiving waters?

Additional Comments:_____

_____

Inspection of Post-Construction Stormwater Management Control Devices

	Type of Control Device	Phase of Construction	Repairs/Maintenance Needed
1.			
2.			
3.			
4.			

General Site Condition

	YES	NO	N/A	
1.	☐	☐	☐	Have action items from previous reports been addressed?
2.	☐	☐	☐	Does routine maintenance of protection components occur on a regular basis?
3.	☐	☐	☐	Does cleaning and/or sweeping affected roadways occur, at minimum, daily?
4.	☐	☐	☐	Is debris and litter removed on a monthly basis, or as necessary?
5.	☐	☐	☐	Is the site maintained in an orderly manner?

Describe the condition of all natural waterbodies within or adjacent to the Project that receive runoff from the site:

_____

Contractors progress over last 7 days:_____

Anticipated work to be begun in the next 7 days:_____

Additional Comments:_____

_____

Visual Observations

	YES	NO	N/A	
1.	☐	☐	☐	All erosion and sediment control measures have been installed/constructed?
2.	☐	☐	☐	All erosion and sediment control measures are being maintained properly?

SUMMARY OF ACTION ITEMS TO REPAIR/REPLACE/MAINTAIN/CORRECT DEFICIENCIES

Action Reported To (no signature required):_____

Company: _____

Appendix H

Other SWPPP Forms

Construction Sequence
SWPPP Plan Changes
Spill Response Form

The contractor shall prepare a summary of construction status using the Construction Sequence Form below once every month. Significant deviations to the sequence and reasons for those deviations (i.e. weather, subcontractor availability, etc.), shall be noted by the contractor. The schedule shall be used to record the dates for initiation of construction, implementation of erosion control measures, stabilization, etc. A copy of this table will be maintained at the construction site and updated in addition to the individual Inspection Reports completed for each inspection.

Construction Sequence Form

Construction Activities (Identify name of planned practices)	Date Complete
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

STORM WATER POLLUTION PREVENTION PLAN
PLAN CHANGES, AUTHORIZATION, AND CHANGE CERTIFICATION

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

_____
_____
_____
_____
_____

REASONS FOR CHANGES:

_____
_____
_____
_____
_____

REQUESTED BY: _____

DATE: _____

AUTHORIZED BY: _____

DATE: _____

CERTIFICATION OF CHANGES:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the penal code.

SIGNATURE: _____

DATE: _____

SPILL RESPONSE REPORT

Within 1 hour of a spill the following must be notified:

Cheryl H. Champ 914-738-3434
NYSDEC Spill Response Hotline 1-800-457-7362
Spill Response Contractor

Material Spilled: _____

Approximate Volume: _____

Location: _____

Distance to nearest down gradient drainage: _____

Distance to nearest down gradient open water: _____

Temporary control measures in place: _____

Appendix I

SPDES General Permit GP-0-25-001

NEW YORK STATE | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL
CONSERVATION (NYSDEC)

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-25-001

Construction General Permit (CGP)

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2025 Expiration Date: January 28, 2030

Scott E. Sheeley

Chief Permit Administrator

Scott E. Sheeley JAN. 29, 2025

Authorized Signature Date

Address: NYSDEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (CWA), and 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), *stormwater discharges* from certain *construction activities* are unlawful unless they are authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. New York State administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7 and 8, and Article 70, as well as 6 NYCRR Parts 621 and 750.

Construction activities constitute construction of a *point source* and, therefore, pursuant to ECL sections 17-0505, 17-0701, and 17-0803, the *owner or operator* must have coverage under a SPDES permit prior to *commencement of construction activities*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES CONSTRUCTION GENERAL PERMIT (CGP) GP-0-25-001
FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part I. How to Obtain Coverage and General Requirements 5
A. Eligibility Requirements 5
B. Types of *Discharges* Authorized 9
C. Prohibited *Discharges* 10
D. Electronic Notice of Intent (eNOI) Submittal 10
E. General Requirements for *Owners or Operators* with Permit Coverage 14
F. Permit Coverage for *Discharges* Authorized Under GP-0-20-001 18
G. Change of *Owner or Operator* 19
Part II. Water Quality-Based Effluent Limitations 20
A. Maintaining Water Quality 20
B. Effluent Limitations Applicable to *Discharges* from *Construction Activities* 20
C. Post-Construction Stormwater Management Practice (SMP) Requirements 23
Part III. Stormwater Pollution Prevention Plan (SWPPP) 28
A. General *SWPPP* Requirements 28
B. Required *SWPPP* Contents 32
C. Required *SWPPP* Components by Project Type 37
Part IV. Inspection and Maintenance Requirements 37
A. General Construction Site Inspection and Maintenance Requirements 37
B. Contractor Maintenance Inspection Requirements 37
C. *Qualified Inspector* Inspection Requirements 38
Part V. How to Terminate CGP Coverage 43
A. Electronic Notice of Termination (eNOT) Submittal 43
Part VI. Record Retention and Reporting 45
A. Record Retention 46
B. Reporting 46
Part VII. Standard Permit Requirements 46
A. Duty to Comply 46
B. Need to Halt or Reduce Activity Not a Defense 46
C. Penalties 46
D. False Statements 47
E. Re-Opener Clause 47
F. Duty to Mitigate 47
G. Requiring Another General Permit or Individual SPDES Permit 47
H. Duty to Provide Information 49
I. Extension 49
J. Signatories and Certification 50
K. Inspection and Entry 52
L. Confidentiality of Information 53
M. Other Permits May Be Required 53
N. NYSDEC Orders or Civil Decrees/Judgments 53
O. Property Rights 53
P. Compliance with Interstate Standards 53
Q. Oil and Hazardous Substance Liability 54
R. Severability 54
S. NYSDEC Approved Forms 54
APPENDIX A – Abbreviations and Definitions 55
Abbreviations 55
Definitions 56
APPENDIX B – Required SWPPP Components by Project Type 64
Table 1 64
Table 2 66
APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal 68
APPENDIX D – Impaired Waterbodies (by Construction Related Pollutants) 74
APPENDIX E – List of NYSDEC Regional Offices 80
APPENDIX F – SWPPP Preparer Certification Form 81
APPENDIX G – MS4 SWPPP Acceptance Form 83
APPENDIX H – NYCDEP SWPPP Acceptance/Approval Form 86
APPENDIX I – MS4 No Jurisdiction Form 89
APPENDIX J – Owner/Operator Certification Form 91

Part I. How to Obtain Coverage and General Requirements

To be covered under this permit, the *owner or operator* must meet all eligibility requirements in Part I.A. and follow the requirements for obtaining permit coverage in Part I.D., F., or G.

A. Eligibility Requirements

For a *common plan of development or sale*, the *phase(s)* that meet the eligibility requirements in Part I.A. may obtain coverage under this permit even if other *phase(s)* of the same *common plan of development or sale* do not meet the eligibility requirements and require an individual SPDES permit.

1. The *owner's or operator's construction activities* involve soil disturbances of:
    a. one or more acres; or
    b. less than one acre which are part of a *common plan of development or sale* that will ultimately disturb one or more acres; or
    c. less than one acre where NYSDEC has determined that a SPDES permit is required for *stormwater discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of pollutants to *surface waters of the State*.
        i. 5,000 square feet or more, but less than one acre, and are in the New York City Watershed located east of the Hudson River, Appendix C Figure 1; or
        ii. 20,000 square feet or more, but less than one acre, within the municipal boundaries of the City of New York (NYC); or
        iii. less than 20,000 square feet which are part of a *common plan of development or sale* that will ultimately disturb 20,000 square feet or more, but less than one acre, within the municipal boundaries of NYC; or
        iv. that creates 5,000 square feet or more of *impervious area* within the municipal boundaries of NYC.

2. *Discharges* from the *owner's or operator's construction activities* are/were not:
    a. already covered by a different SPDES permit; or
    b. covered under a different SPDES permit that was denied, terminated, or revoked; or
    c. identified in an expired individual SPDES permit that was not renewed; or
    d. required to obtain an individual SPDES permit or another general SPDES permit in accordance with Part VII.K.
3. If *construction activities* may adversely affect a species that is endangered or threatened, the *owner or operator* must obtain a:
    a. permit issued pursuant to 6 NYCRR Part 182 for the project; or
    b. letter issued by NYSDEC of non-jurisdiction pursuant to 6 NYCRR Part 182 for the project.
4. If *construction activities* have the potential to affect an *historic property*, the *owner or operator* must obtain one of the following:
    a. documentation that the *construction activity* is not within an archeological buffer area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant:
        i. 1-5 acres of disturbance - 20 feet; or
        ii. 5-20 acres of disturbance - 50 feet; or

        iii. 20+ acres of disturbance - 100 feet.
    b. NYSDEC consultation form sent to OPRHP,[1] and copied to NYSDEC's Agency Historic Preservation Officer (APO), and
        i. the State Environmental Quality Review Act (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
        ii. documentation from OPRHP that the *construction activity* will result in No Impact; or
        iii. documentation from OPRHP providing a determination of No Adverse Impact; or
        iv. a Letter of Resolution signed by the *owner or operator*, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA).
    c. documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:
        i. No Affect; or
        ii. No Adverse Affect; or
        iii. Executed Memorandum of Agreement.
    d. documentation that SHPA Section 14.09 has been completed by NYSDEC or another state agency.
5. If *construction activities* are subject to SEQR, the *owner or operator* must obtain documentation that SEQR has been satisfied.
6. If *construction activities* are not subject to SEQR, but subject to the equivalent environmental review from another New York State or federal agency, the

[1] The consultation form can be submitted, along with other project information, through OPRHP's Cultural Resource Information System (CRIS) portal. If submitted through CRIS, paper copies of the consultation form need not be mailed.

owner or operator must obtain documentation that project review, pursuant to a process equivalent to SEQR from another New York State or federal agency, has been satisfied.

7. If *construction activities* require Uniform Procedures Act (UPA) Permits (see 6 NYCRR Part 621) from NYSDEC, or the equivalent from another New York State or federal agency, the *owner or operator* must:
    a. obtain all such necessary permits; or
    b. receive notification from NYSDEC pursuant to 6 NYCRR 621.3(a)(4) excepting Part I.A.7.a.
8. *Construction activities* are not eligible if they meet the following criteria in Part I.A.8.a. or b.:
    a. For linear transportation and linear utility project types, the *construction activities*:
        i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and
        ii. are undertaken on land with no existing *impervious cover*; and
        iii. disturb two or more acres of *steep slope*.
    b. For all other project types, the *construction activities*:
        i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and
        ii. are undertaken on land with no existing *impervious cover*; and
        iii. disturb one or more acres of *steep slope*.

B. Types of *Discharges* Authorized

1. The following *stormwater discharges* are authorized under this permit:

   a. *Stormwater discharges*, including *stormwater* runoff, snowmelt runoff, and surface runoff and drainage, associated with *construction activity*, are authorized under this permit provided that appropriate *stormwater* controls are designed, installed, and maintained in accordance with Part II. and Part III.

   b. *Stormwater discharges* from construction support activities at the *construction site* (including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas) if the following requirements are met:

      i. The support activity is directly related to the *construction site* required to have permit coverage for *stormwater discharges*; and

      ii. The support activity is not a commercial operation, nor does it serve multiple unrelated *construction sites*; and

      iii. The support activity does not continue to operate beyond the completion of the *construction activity* at the site it supports; and

      iv. *Stormwater* controls are implemented in accordance with Part II. and Part III. for *discharges* from the support activity areas.

2. The following non-*stormwater discharges* associated with *construction activity* are authorized under this permit:

   a. Non-*stormwater discharges* listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "*Discharges* from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; and

   b. Non-*stormwater discharges* of waters to which other components have not been added that are used in accordance with the *SWPPP* to control dust or irrigate vegetation in stabilized areas; and

   c. Uncontaminated *discharges* from *dewatering* operations

3. Authorized *discharges* of *stormwater* or authorized *discharges* of non-*stormwater*, commingled with a *discharge* authorized by a different SPDES permit and/or a *discharge* that does not require SPDES permit authorization, are also authorized under this permit.

C. Prohibited *Discharges*

1. Non-*stormwater discharges* prohibited under this permit include but are not limited to:

   a. Wastewater from washout of concrete; and

   b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; and

   c. Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance; and

   d. Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

   e. Toxic or hazardous substances from a spill or other release.

D. Electronic Notice of Intent (eNOI) Submittal

To receive authorization in accordance with Part I.D.3.b., the *owner or operator* must submit a complete eNOI in accordance with the requirements in Part I.D. The eNOI contains questions to: ensure eligibility requirements in Part I.A. have been met; obtain *owner or operator* contact information; obtain the total area to be disturbed and the existing/future *impervious areas* (rounded to the nearest tenth of an acre); confirm *Traditional Land Use Control MS4 Operator* jurisdiction over construction projects; satisfy the EPA eRule requirements; confirm that the Water Quality-Based Effluent Limitations in Part II. have been met; demonstrate consideration of the future risks due to climate change in accordance with Part III.A.2.; and confirm that the other *Stormwater Pollution Prevention Plan (SWPPP)* requirements in Part III. have been met.

1. An eNOI may be submitted for:

   a. *construction activities* that are not part of a *common plan of development or sale*; or

   b. an entire *common plan of development or sale*; or

   c. separate *phase(s)* of a *common plan of development or sale* if the following requirements are met:

      i. the *common plan of development or sale* meets the eligibility requirements of Part I.A.5. or 6.; and

      ii. the *phase(s)* meet(s) all other eligibility requirements of Part I.A.; and

      iii. Part III.C. Required *SWPPP* Components by Project Type is based on the *common plan of development or sale*, not the *phase(s)*; or

   d. *tree clearing* that is associated with, or will support, a *renewable energy* generation, transmission, or storage project that meets Part I.A.5. and 6., if the *tree clearing*:

      i. meets all other eligibility requirements of Part I.A.; and

      ii. will occur in NYSDEC's Regions 3-9; and

      iii. is not within ¼ mile of a bat hibernaculum protected pursuant to 6 NYCRR Part 182; and

      iv. will occur between November 1st and March 31st.

2. As prerequisites for submitting an eNOI, the *owner or operator* must:

   a. prepare a *SWPPP* for Part I.D.1.a., b., c., or d. in accordance with Part III.; and

   b. based on the following criteria, upload the following signature forms signed in accordance with Part VII.J. to the eNOI prior to submission:

      i. for all eNOIs:

         1. the SWPPP Preparer Certification Form, Appendix F, signed by the *SWPPP* preparer; and

         2. the Owner/Operator Certification Form, Appendix J, signed by the *owner or operator*; and

      ii. if an eNOI includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that will *discharge* to the *MS4(s)*:

         1. determine if the *Traditional Land Use Control MS4 Operator(s)* have review authority. A *Traditional Land Use Control MS4 Operator* does not have review authority where:

            a. the *owner or operator* of the *construction activities* in Part I.D.2.b.ii. is the same entity as the *Traditional Land Use Control MS4 Operator* identified in Part I.D.2.b.ii.; or

            b. there is a statute exempting the *owner or operator* from zoning review by the *Traditional Land Use Control MS4 Operator*; or

            c. there is no such statute per Part I.D.2.b.ii.1.b., the *Traditional Land Use Control MS4 Operator* concludes, after public hearing, that it does not have zoning review authority in accordance with Legal Memorandum LU14 Updated January 2020 "Governmental Immunity from Zoning and Other Legislation"; and

         2. if the *Traditional Land Use Control MS4 Operator(s)* have review authority, submit the *SWPPP* to the *Traditional Land Use Control MS4 Operator(s)* for review and have:

            a. if outside the municipal boundaries of NYC: the MS4 SWPPP Acceptance Form, Appendix G, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator,* or by a duly authorized representative of that person in accordance with Part VII.J.2.; or

b. if within the municipal boundaries of NYC: The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval Form, Appendix H, signed by the principal executive officer or ranking elected official from the Traditional Land Use Control MS4 Operator, or by a duly authorized representative of that person in accordance with Part VII.J.2.; and

3. if the *Traditional Land Use Control MS4 Operator* does not have review authority, have the MS4 No Jurisdiction Form, Appendix I, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator,* or by a duly authorized representative of that person in accordance with Part VII.J.2.

3. Submitting an eNOI:

   a. The *owner or operator* must submit a complete Notice of Intent electronically using a NYSDEC approved form.[2]

   b. The *owner or operator* is authorized to *commence construction activity* as of the authorization date indicated in the Letter of Authorization (LOA), which is sent by NYSDEC after a complete eNOI is submitted.

      i. If an eNOI is received for a *SWPPP* that deviates from one of the technical standards but demonstrates *equivalence* in accordance with Part III.B.1.a.ii. or Part III.B.2.b.ii., if the *SWPPP* includes *construction activities* that are not within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)*, and/or if the *SWPPP* includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that do not have review authority in accordance with Part I.D.2.b.ii.1., the authorization date indicated in the LOA will be 60 business days after the eNOI submission date.

[2] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

c. If *Traditional Land Use Control MS4 Operator(s)* have review authority in accordance with Part I.D.2.b.ii.2., the *owner or operator* must, within five business days of receipt of the LOA, send an electronic copy of the LOA to the *Traditional Land Use Control MS4 Operator(s)* with review authority.

E. General Requirements for *Owners or Operators* with Permit Coverage

1. As of the date the LOA is received, the *owner or operator* must make the eNOI, *SWPPP*, and LOA available for review and copying in accordance with the requirements in Part VII.H. When applicable, as of the date an updated LOA is received, the *owner or operator* must make the updated LOA available for review and copying in accordance with the requirements in Part VII.H.

2. The *owner or operator* must ensure compliance with all requirements of this permit and that the provisions of the *SWPPP*, including any changes made to the *SWPPP* in accordance with Part III.A.5., are properly implemented and maintained from the *commencement of construction activity* until:

   a. all areas of disturbance have achieved *final stabilization;* and

   b. the owner's or operator's coverage under this permit is terminated in accordance with Part V.A.5.a.

3. As of the date of the *commencement of construction activities* until Part I.E.2.a. and b. have been met, the *owner or operator* must maintain at the *construction site*, a copy of:

   a. all documentation necessary to demonstrate eligibility with this permit; and

   b. this permit; and

   c. the *SWPPP*; and

   d. the signed SWPPP Preparer Certification Form; and

   e. the signed MS4 SWPPP Acceptance Form or signed NYCDEP SWPPP Acceptance/Approval Form or signed MS4 No Jurisdiction Form (when applicable); and

   f. the signed Owner/Operator Certification Form; and

   g. the eNOI; and

   h. the LOA; and

   i. the LOA transmittal to the Traditional Land Use Control MS4 Operator in accordance with Part I.D.3.c. (when applicable).

4. The *owner or operator* must maintain at the *construction site*, until Part I.E.2.a. and b. have been met, as of the date the documents become final or are received, a copy of the:

   a. responsible contractor's or subcontractor's certification statement(s) in accordance with Part III.A.7.; and

   b. inspection reports in accordance with Part IV.C.4. and 6.; and

   c. Request to Disturb Greater Than Five Acres and the Authorization Letter to Disturb Greater Than Five Acres in accordance with Part I.E.6. (when applicable); and

   d. Request to Continue Coverage and the Letter of Continued Coverage (LOCC) in accordance with Part I.F.2. and 4. (when applicable); and

   e. The updated LOA(s) in accordance with Part I.E.9. (when applicable).

5. The *owner or operator* must maintain the documents in Part I.E.3. and 4. in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection. The documents must be paper documents unless electronic documents are accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be. If electronic documents are kept on site, the *owner or operator* must maintain functional equipment on site available to an inspector during normal hours of operation such that an inspector may view the electronic documents in a format that can be read in a similar manner as a paper record and in a legally dependable format with no less evidentiary value than their paper equivalent.

6. The *owner or operator* must meet the following requirements prior to disturbing greater than five acres of soil at any one time:

   a. The *owner or operator* must submit a written Request to Disturb Greater Than Five Acres to:

      i. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, if a *Traditional Land Use Control MS4 Operator* does not have review authority in accordance with Part I.D.2.b.ii.1.; or

      ii. the *Traditional Land Use Control MS4 Operator*, if a *Traditional Land Use Control MS4 Operator* has review authority in accordance with Part I.D.2.b.ii.1.; or

      iii. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, and each involved *Traditional Land Use Control MS4 Operator*, if the project spans multiple municipalities with more than one *Traditional Land Use Control MS4 Operator* involved with review authority in accordance with Part I.D.2.b.ii.1.

   b. The written Request to Disturb Greater Than Five Acres must include:

      i. The SPDES permit identification number (Permit ID); and

      ii. Full technical justification demonstrating why alternative methods of construction that would result in five acres of soil disturbance or less at any one time are not feasible; and

      iii. The phasing plan for the project and sequencing plans for all *phases* from the *SWPPP* in accordance with Part III.B.1.d.; and

      iv. Plans with locations and details of erosion and sediment control practices such that the heightened concern for erosion when disturbing greater than five acres at one time has been addressed; and

      v. Acknowledgment that "the *owner or operator* will comply with the requirements in Part IV.C.2.b."; and

      vi. Acknowledgment that "the *owner or operator* will comply with the requirements in Part II.B.1.b."

   c. The *owner or operator* must be in receipt of an Authorization Letter to Disturb Greater Than Five Acres, which will include when the

authorization begins and ends and indicate a maximum area (acres) of soil disturbance allowed at any one time, from:

i. NYSDEC, if Part I.E.6.a.i. or iii. apply; or

ii. the *Traditional Land Use Control MS4 Operator*, if Part I.E.6.a.ii. applies.

7. Upon a finding of significant non-compliance with the practices described in the *SWPPP* or violation of this permit, NYSDEC may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order must be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

8. If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE).[3] *Construction activity* shall not resume until written permission to do so has been received from the RWE.

9. To be authorized to implement modifications to the information previously submitted in the eNOI, the *owner or operator* must:

   a. notify NYSDEC via email at Stormwater_info@dec.ny.gov requesting access to update the eNOI; and

   b. update the eNOI to reflect the modifications and resubmit the eNOI in accordance with Part I.D.; and

   c. receive an updated LOA.

10. The eNOI, *SWPPP*, LOA, updated LOAs (when applicable), and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

[3] The Regional Water Manager where a DEC Region does not have a RWE.

F. Permit Coverage for *Discharges* Authorized Under GP-0-20-001

When applicable:

1. Upon the effective date of this permit, an *owner or operator* of *a construction activity*, with coverage under GP-0-20-001, will have interim coverage under GP-0-25-001 for 45 calendar days starting on the effective date of GP-0-25-001 so long as the *owner or operator* maintains compliance with all applicable requirements of this permit.

2. Within 30 calendar days of the effective date of this permit, the *owner or operator*, with coverage under GP-0-20-001, must submit a complete Request to Continue Coverage electronically using a NYSDEC approved form,[4] which contains the information identified in Part I.F.3. below, if:

   a. the *owner or operator* continues to implement the SMP component in conformance with the technical standards in place at the time of initial project authorization; and

   b. the *owner or operator* will comply with all non-design requirements of GP-0-25-001.

3. The Request to Continue Coverage form contains questions to: ensure eligibility requirements in Part I.A. have been met; verify *owner or operator* contact information; verify the permit identification number; verify the original eNOI submission ID, if applicable; verify Part I.F.2.a. and b.; verify the version of the Design Manual that the technical/design components conform to; and receive an updated Owner/Operator Certification Form, Appendix I.

4. The *owner or operator* has obtained continued coverage under GP-0-25-001 as of the date indicated in the LOCC, which is sent by NYSDEC after a complete Request to Continue Coverage form is submitted.

5. If the owner or operator does not submit the Request to Continue Coverage form in accordance with Part I.F.2. and 3., coverage under this permit is automatically terminated after interim coverage expires.

[4] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

G. Change of *Owner or Operator*

When applicable:

1. When property ownership changes, or when there is a change in operational control over the construction plans and specifications, the following process applies:

   a. The new *owner or operator* must meet the applicable prerequisites for submitting an eNOI in accordance with Part I.D.2.; and

   b. The new *owner or operator* must submit an eNOI in accordance with Part I.D.3.; and

   c. Permit coverage for the new *owner or operator* will be effective upon receipt of the LOA in accordance with Part I.D.3.b.; and

   d. The new *owner or operator*, upon receipt of their LOA, must provide their Permit ID to the original *owner or operator*; and

   e. If the original *owner or operator* will no longer be the *owner or operator* of the *construction activity* identified in the original *owner's or operator's* eNOI, the original *owner or operator*, upon receipt of the new *owner's or operator's* Permit ID in accordance with Part I.G.1.d., must submit to NYSDEC a completed eNOT in accordance with Part V. that includes the name and Permit ID of the new *owner or operator*; or

   f. If the original *owner or operator* maintains ownership of a portion of the *construction activity*, the original *owner or operator* must maintain their coverage under the permit by modifying their eNOI; modifications to the eNOI must include:

      i. the revised area of disturbance and/or *impervious area(s)*; and

      ii. the revised SMP information, if applicable; and

      iii. a narrative description of what has changed; and

      iv. the new *owner's or operator's* Permit ID for the portion of the project removed from the eNOI.

   Owners or operators must follow Part I.E.9. to modify the eNOI.

Part II. Water Quality-Based Effluent Limitations

A. Maintaining Water Quality

NYSDEC expects that compliance with the requirements of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any *discharge* to either cause or contribute to a violation of the following *water quality standard*s as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York:

1. There must be no increase in turbidity that will cause a substantial visible contrast to natural conditions; and

2. There must be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There must be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the *stormwater discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standard,* the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this permit and document in accordance with Part IV.C.4. of this permit. To address the *water quality standard* violation the *owner or operator* must include and implement appropriate controls in the *SWPPP* to correct the problem or obtain an individual SPDES permit.

If, despite compliance with the requirements of this permit, it is demonstrated that the *stormwater discharge*s authorized by this permit are causing or contributing to a violation of *water quality standard*s, or if NYSDEC determines that a modification of this permit is necessary to prevent a violation of *water quality standard*s, the authorized *discharge*s will no longer be eligible for coverage under this permit, and the *owner or operator* must obtain an individual SPDES permit prior to further *discharges* from the *construction site*.

B. Effluent Limitations Applicable to *Discharges* from *Construction Activities*

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part II.B.1.a., b., c., d., and e. These limitations represent the

degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement, and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part II.B.1.a., b., c., d., and e. and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (BB), dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in *SWPPP* the reason(s) for the deviation, or alternative design, and provide information in the *SWPPP* demonstrating that the deviation or alternative design is *equivalent* to the technical standard.

    a. **Erosion and Sediment Controls.** At a minimum, erosion and sediment controls must be selected, designed, installed, implemented, and maintained to:

        i. *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s; and

        ii. Control *stormwater discharge*s, including both peak flow rates and total *stormwater* volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points; and

        iii. *Minimize* the amount of soil exposed during *construction activity*; and

        iv. *Minimize* the disturbance of *steep slope*; and

        v. *Minimize* sediment *discharge*s from the site; and

        vi. Provide and maintain *natural buffers* around surface waters, direct *stormwater* to vegetated areas and maximize *stormwater* infiltration to reduce *pollutant discharge*s, unless *infeasible*; and

        vii. *Minimize* soil compaction. *Minimizing* soil compaction is not required

where the intended function of a specific area of the site dictates that it be compacted; and

        viii. Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

        ix. *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of *pollutants* that could be discharged from the site.

    b. **Soil Stabilization**. In areas where soil disturbance activity has ceased, whether permanently or *temporarily ceased*, the application of soil stabilization measures must be initiated by the end of the next business day and completed within 14 calendar days from the date the current soil disturbance activity ceased. For *construction sites* that *directly discharge* to one of the 303(d) segments listed in Appendix D, or are located in one of the watersheds listed in Appendix C, or are authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii., the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven calendar days from the date the soil disturbance activity ceased.

    c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

    d. **Pollution Prevention Measures**. Select, design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be selected, designed, installed, implemented, and maintained to:

        i. *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. Soaps, detergents and solvents cannot be used; and

        ii. *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation

and to *stormwater*. *Minimization* of exposure is not required in cases where the exposure to precipitation and to *stormwater* will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of *stormwater* contamination (such as final products and materials intended for outdoor use); and

        iii. Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

    e. **Surface Outlets.** When discharging from basins and impoundments, the surface outlets must be designed, constructed, and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-Construction Stormwater Management Practice (SMP) Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction SMPs, in accordance with Part III.C., must select, design, install, implement, and maintain the SMPs to meet the *performance criteria* in the New York State Stormwater Management Design Manual, dated July 31, 2024 (DM), using sound engineering judgment. Where SMPs are not designed in conformance with the *performance criteria* in the DM, the *owner or operator* must include in the *SWPPP* the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity*, that requires SMPs in accordance with Part III.C., must design the practices to meet the applicable *sizing criteria* in Part II.C.2.a., b., c., or d.

    a. Sizing Criteria for *New Development*

        i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

            1. Reduce the total WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv must be calculated in accordance with the criteria in Section 4.2 of the DM; or

            2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the requirements in Part II.C.2.a.i.1. due to *site limitations* must direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv must be documented in the *SWPPP*. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the *SWPPP* must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

                In no case shall the runoff reduction achieved from the newly constructed *impervious area*s be less than the Minimum RRv as calculated using the criteria in Section 4.4 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

        ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:

            1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or

            2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs without detention or velocity controls; or

            3. The site *directly discharges* into a fifth order or larger water body (stream, river, or lake), or tidal waters, where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams, or

2. A downstream analysis reveals that *overbank* control is not required.

iv. Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams, or

2. A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watersheds

i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

1. Reduce the WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24-hour design storm over the post-developed watershed and must be calculated in accordance with the criteria in Section 4.3 of the DM; or

2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part II.C.2.b.i.1. due to *site limitations* must direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv must be documented in the *SWPPP*. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the *SWPPP* must include

documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 4.5 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:

1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or

2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs; or

3. The site *directly discharges* to tidal waters, or a fifth order or larger water body (stream, river, or lake) where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams; or

2. A downstream analysis reveals that *overbank* control is not required.

iv. Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams; or

2. A downstream analysis reveals that *overbank* control is not required.

c. *Sizing Criteria* for *Redevelopment Activity*

i. Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* must be addressed by one of the following options, as outlined in Section 9.2.1. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C) must calculate the WQv in accordance with Section 4.3 of the DM. All other *redevelopment activities* must calculate the WQv in accordance with Section 4.2 of the DM.

1. Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the DM must be applied to all newly created pervious areas; or

2. Capture and treat 100% of the required WQv, for a minimum of 25% of the disturbed redevelopment *impervious area*, by implementation of standard SMPs or reduced by application of runoff reduction techniques; or

3. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a volume-based alternative SMP, as defined in Section 9.4 of the DM; or

4. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a flow-through alternative SMP sized to treat the peak rate of runoff from the WQv design storm; or

5. Application of a combination of 1 through 4 above that provide a weighted average of at least two of the above methods. Application of this method must be in accordance with the criteria in Section 9.2.1(A)(V) of the DM; or

6. If there is an existing SMP located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 through 5 above.

ii. Channel Protection Volume (CPv) is not required if there is 0% change to hydrology that increases the *discharge* rate and volume from the project site.

iii. *Overbank* Flood Control (Qp) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

iv. Extreme Flood Control (Qf) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

d. *Sizing Criteria* for Combination of *Redevelopment Activity* and *New Development*

Construction projects, that include both *new development* and *redevelopment activity*, must use SMPs that meet the *sizing criteria* calculated as an aggregate of the *sizing criteria* in Part II.C.2.a. or b. for the *new development* portion of the project and Part II.C.2.c. for the *redevelopment activity* portion of the project.

Part III. Stormwater Pollution Prevention Plan (SWPPP)

A. General *SWPPP* Requirements

1. A *SWPPP* must be prepared and implemented by the *owner or operator* of all *construction activity* covered by this permit. All authorized *discharges* must be identified in the *SWPPP*. The *SWPPP* must document the selection, design, installation, implementation and maintenance of the control measures and

practices that will be used to meet the effluent limitations in Part II.B. and, where applicable, the SMP requirements in Part II.C.

2. The *SWPPP* must demonstrate consideration in narrative format of the future physical risks due to climate change pursuant to the Community Risk and Resiliency Act (CRRA), 6 NYCRR Part 490, and associated guidance.

   a. The owner or operator must consider:

      i. the following physical risks due to climate change:

         (i) increasing temperature; and

         (ii) increasing precipitation; and

         (iii) increasing variability in precipitation, including chance of drought; and

         (iv) increasing frequency and severity of flooding; and

         (v) rising sea level; and

         (vi) increasing storm surge; and

         (vii) shifting ecology.

      ii. for each of the following:

         (i) overall site planning; and

         (ii) location, elevation, and sizing of:

            a. control measures and practices; and

            b. conveyance system(s); and

            c. detention system(s).

3. The *SWPPP* must describe the erosion and sediment control practices and where required, SMPs that will be used and/or constructed to reduce the *pollutants* in *stormwater discharges* and to assure compliance with the

requirements of this permit. In addition, the *SWPPP* must identify potential sources of pollution which may reasonably be expected to affect the quality of *stormwater discharges*.

4. All *SWPPPs*, that require the SMP component in accordance with Part III.B.2., must be prepared by a *qualified professional*.

5. The *owner or operator* must keep the *SWPPP* current so that, at all times, it accurately documents the erosion and sediment control practices that are being used or will be used during construction, and all SMPs that will be constructed on the site. At a minimum, the *owner or operator* must modify the *SWPPP*, including construction drawings:

   a. whenever the current provisions prove to be ineffective in *minimizing pollutants* in *stormwater discharges* from the site; and

   b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*; and

   c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* NYSDEC, or other regulatory authority; and

   d. to document the final construction conditions in an as-built drawing.

6. NYSDEC may notify the *owner or operator* at any time that the *SWPPP* does not meet one or more of the minimum requirements of this permit. The notification must be in writing and identify the provisions of the *SWPPP* that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by NYSDEC, the *owner or operator* must make the required changes to the *SWPPP* and submit written notification to NYSDEC that the changes have been made. If the *owner or operator* does not respond to NYSDEC's comments in the specified time frame, NYSDEC may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4.

7. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices included in the *SWPPP* and the

contractor(s) and subcontractor(s) that will be responsible for constructing the SMPs included in the *SWPPP*. The *owner or operator* must have each of the contractors and subcontractors identify at least one person from their company to be *trained contractor* that will be responsible for implementation of the *SWPPP*. The *owner or operator* must ensure that at least one *trained contractor* is on site daily when soil disturbance activities are being performed.

The *owner or operator* must have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before the *commencement of construction activities*:

> "I hereby certify under penalty of law that I understand and agree to comply with the requirements of the *SWPPP* and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) Construction General Permit (CGP) for Stormwater Discharges from Construction Activities and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the *SWPPP* that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for *SWPPP* implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* must attach the certification statement(s) to the copy of the *SWPPP* that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the *SWPPP* after the *commencement of construction activities*, they must also sign the certification statement and provide the information listed above prior to performing *construction activities*.

B. Required *SWPPP* Contents

1. Erosion and sediment control component - The *owner or operator* must prepare a *SWPPP* that includes erosion and sediment control practices.

   a. Erosion and sediment control practices must be designed:

      i. in conformance with the BB; or

      ii. *equivalent* to the BB if deviating from Part III.B.1.a.i.

   b. If the erosion and sediment control practices are designed in conformance with Part III.B.1.a.ii., the *SWPPP* must include a demonstration of *equivalence* to the BB.

   c. At a minimum, the erosion and sediment control component of the *SWPPP* must include the following:

      i. Background information about the scope of the project, including the location, type and size of project; and

      ii. A site map/construction drawing(s) with north arrows for the project, including a general location map. At a minimum, the site map must show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the *stormwater discharge*(s) and receiving surface water(s); and

      iii. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG); and

      iv. A phasing plan for the project and sequencing plans for all *phases*, both of which must address clearing and grubbing, excavation and grading, utility and infrastructure installation, *final stabilization*,

and any other *construction activity* at the site that will result in soil disturbance.

1. The phasing plan must include:

    a. a map delineating and labeling the limits of soil disturbance for all *phases* of a project; and

    b. a table identifying the order and intended schedule of when each *phase* will begin and end its sequencing plan. The table must identify the total disturbed area for each *phase* at any one time and the total disturbed area for the overall project at any one time all on one timeline showing all overlapping quantities of disturbed area at any one time; and

2. A sequencing plan for a specific *phase* must include:

    a. a table indicating the order and intended schedule of *construction activities* within a *phase*, and corresponding construction drawings with a description of the work to be performed; and

    b. all permanent and *temporary stabilization* measures; and

v. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented; and

vi. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice; and

vii. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any

temporary sediment basins and structural practices that will be used to divert flows from exposed soils; and

viii. A maintenance inspection schedule for the contractor(s) and subcontractor(s) identified in Part III.A.7. to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule must be in accordance with the requirements in the BB technical standard; and

ix. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the *stormwater discharges*; and

x. A description and location of any *stormwater discharges* associated with industrial activity other than construction at the site, including, but not limited to, *stormwater discharges* from asphalt plants and concrete plants located on the *construction site*; and

xi. Identification of any elements of the design that are not in conformance with the design criteria in the BB technical standard. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. SMP component – The *owner or operator* of *construction activity* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs.

    a. SMPs must be designed in conformance with the applicable *sizing criteria* in Part II.C.2.a., c., or d.; and

    b. SMPs must be designed in conformance with the *performance criteria*:

        i. in the DM; or

        ii. *equivalent* to the DM if deviating from Part III.B.2.b.i.; or

        iii. in the New York State Stormwater Management Design Manual, dated January 2015 (2015 Design Manual), or *equivalent* to it, if the following criteria are met:

1. The eNOI is submitted in accordance with Part I.D. before January 29, 2027 for *construction activities* that are either:

    a. subject to governmental review and approval:

        i. where the *owner or operator* made any application to that governmental entity prior to the effective date of this permit; and

        ii. such application included a *SWPPP* developed using the 2015 Design Manual or *equivalent* to it; or

    b. not subject to governmental review and approval:

        i. where a fiscal allocation for the *construction activities* has been developed and approved by a governmental entity; and

        ii. the *SWPPP* was developed using the 2015 Design Manual or *equivalent* to it; and

c. If SMPs are designed in conformance with Part III.B.2.b.ii., the *SWPPP* must include the reason(s) for the deviation or alternative design and a demonstration of *equivalence* to the DM; and

d. If SMPs are designed in conformance with Part III.B.2.b.iii., the *SWPPP* must include supporting information or documentation demonstrating that Part III.B.2.b.iii.1.a. or b. apply; and

e. The SMP component of the *SWPPP* must include the following:

    i. Identification of all SMPs to be constructed as part of the project, including which option the SMP designs conform to, either Part III.B.2.b.i., ii., or iii. Include the dimensions, material specifications and installation details for each SMP; and

    ii. A site map/construction drawing(s) showing the specific location and size of each SMP; and

iii. A Stormwater Modeling and Analysis Report that includes:

    (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points; and

    (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and SMPs; and

    (iii) Results of *stormwater* modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre- and post-development runoff rates and volumes for the different storm events; and

    (iv) Summary table, with supporting calculations, which demonstrates that each SMP has been designed in conformance with the *sizing criteria* included in the DM; and

    (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part II.C.; and

    (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the DM. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the DM.

iv. Soil testing results and locations (test pits, borings); and

v. Infiltration test results, when required in accordance with Part III.B.2.a.; and

vi. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each SMP. The plan must identify the entity

that will be responsible for the long-term operation and maintenance of each practice; and

3. Enhanced Phosphorus Removal Standards - The *owner or operator* of *construction activity* identified in Table 2 of Appendix B that is located in a watershed identified in Appendix C must prepare a *SWPPP* that includes SMPs designed in conformance with the applicable *sizing criteria* in Part II.C.2.b., c., or d. and the *performance criteria* Enhanced Phosphorus Removal Standards included in the DM. At a minimum, the SMP component of the *SWPPP* must meet the requirements of Part III.B.2.

C. Required *SWPPP* Components by Project Type

Owners or operators of *construction activities*, identified in Table 1 of Appendix B, are required to prepare a *SWPPP* that only includes erosion and sediment control practices designed in accordance with Part III.B.1. *Owners or operators* of the *construction activities*, identified in Table 2 of Appendix B, must prepare a *SWPPP* that also includes SMPs designed in accordance with Part III.B.2 or 3.

For the entire area of disturbance, including the entire *common plan of development or sale* if applicable, the owner or operator must evaluate every bullet from Appendix B Table 1 and Table 2 separately. If bullets from both Table 1 and Table 2 apply, the *SWPPP* must include erosion and sediment control practices for all *construction activities* but SMPs for only those portions of the *construction activities* that fall under Table 2 bullet(s).

Part IV. Inspection and Maintenance Requirements

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures), and all SMPs identified in the *SWPPP*, are inspected and maintained in accordance with Part IV.B. and C.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity*, identified in Tables 1 and 2 of Appendix B, must have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being

implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor must:

a. if the corrective action does not require engineering design:

   i. begin implementing corrective actions within one business day; and

   ii. complete the corrective actions within five business days; or

b. if the corrective action requires engineering design:

   i. begin the engineering design process within five business days; and

   ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

2. For *construction sites* where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections in accordance with Part IV.B.1. The *trained contractor* must begin conducting the maintenance inspections in accordance with Part IV.B.1. as soon as soil disturbance activities resume.

3. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections in accordance with Part IV.B.1. if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational.

C. *Qualified Inspector* Inspection Requirements

1. With the exception of the following *construction activities* identified in Tables 1 and 2 of Appendix B, a *qualified inspector* must conduct site inspections for all other *construction activities* identified in Tables 1 and 2 of Appendix B:

   a. the construction of a single-family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than or equal to five (5) acres and is

not located in one of the watersheds listed in Appendix C and not *directly discharging* to one of the 303(d) segments listed in Appendix D; and

   b. the construction of a single-family home that involves soil disturbances of one (1) or more acres but less than or equal to five (5) acres and is not located in one of the watersheds listed in Appendix C and not *directly discharging* to one of the 303(d) segments listed in Appendix D; and

   c. construction on *agricultural property* that involves soil disturbances of one (1) or more acres but less than five (5) acres; and

   d. *construction activities* located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances of 5,000 square feet or more, but less than one acre.

2. The *qualified inspector* must conduct site inspections in accordance with the following timetable:

   a. For *construction sites* where soil disturbance activities are on-going, the *qualified inspector* must conduct a site inspection at least once every seven (7) calendar days; or

   b. For *construction sites* where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part I.E.6. to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days; or

   c. For *construction sites* where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* must conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas under the jurisdiction of a *Traditional Land Use Control MS4 Operator*, the *Traditional Land Use Control MS4 Operator* (provided the *Traditional Land Use Control MS4 Operator* is not the *owner or operator* of the *construction activity*) by hard copy or email prior to reducing the inspections to this frequency and again by hard copy or email prior to re-commencing construction; or

   d. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the requirement to have the *qualified inspector* conduct inspections ceases if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1., the *Traditional Land Use Control MS4 Operator(s)* (provided the *Traditional Land Use Control MS4 Operator(s)* are not the *owners or operators* of the *construction activity*) in writing prior to the shutdown and again in writing prior to resuming *construction activity*. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* must terminate coverage by meeting the requirements of Part V; or

   e. For *construction sites* involving soil disturbance of one (1) or more acres that *directly discharge* to one of the 303(d) segments listed in Appendix D or is located in one of the watersheds listed in Appendix C, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* must inspect:

   a. all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness; and

   b. all SMPs under construction to ensure that they are constructed in conformance with the *SWPPP*; and

   c. all areas of disturbance that have not achieved *final stabilization*; and

   d. all points of *discharge* to *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site*; and

   e. all points of *discharge* from the *construction site*.

4. The *qualified inspector* must prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report must include and/or address all of the following, for all *construction activities* except those listed in Part IV.C.1.:

   a. Permit identification number; and

   b. Date and time of inspection; and

   c. Name and title of person(s) performing inspection; and

   d. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection, including the temperature at the time of the inspection; and

   e. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This must include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow; and

   f. A description of the condition of all *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This must include identification of any *discharges* of sediment to the *surface waters of the State*; and

   g. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance; and

   h. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced; and

   i. Description and sketch (map) of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection; and

   j. Estimates, in square feet or acres, of the following areas:

      i. Total area with active soil disturbance (not requiring either *temporary stabilization* or *final stabilization*); and

      ii. Total area with inactive soil disturbance (requiring either *temporary stabilization* or *final stabilization*); and

      iii. Total area that has achieved *temporary stabilization*; and

      iv. Total area that has achieved *final stabilization*; and

   k. Current stage of construction of all SMPs and identification of all *construction activity* on site that is not in conformance with the *SWPPP* and technical standards; and

   l. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the SMP(s); and

   m. Identification and status of all corrective actions that were required by previous inspection; and

   n. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* must attach color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* must also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* must attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* must notify the *owner or operator*, and appropriate contractor or subcontractor identified in Part III.A.7., of any corrective actions that need to be taken. The contractor or subcontractor must:

   a. if the corrective action does not require engineering design:

      i. begin implementing corrective actions within one business day; and

      ii. complete the corrective actions within five business days; or

   b. if the corrective action requires engineering design:

      i. begin the engineering design process within five business days; and

      ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

6. All inspection reports must be signed by the *qualified inspector*. In accordance with Part I.E.3., the inspection reports must be maintained on site with the *SWPPP*.

Part V. How to Terminate CGP Coverage

A. Electronic Notice of Termination (eNOT) Submittal

The eNOT contains questions to ensure requirements in Part V.A. have been met.

1. An *owner or operator* must terminate coverage when one or more of the following requirements have been met:

   a. Total project completion:

      i. all *construction activity* identified in the *SWPPP* has been completed; and

      ii. all areas of disturbance have achieved *final stabilization*; and

      iii. all temporary, structural erosion and sediment control measures have been removed; and

      iv. all SMPs have been constructed in conformance with the *SWPPP* and are operational; and

      v. an as-built drawing has been prepared; or

   b. Planned shutdown with partial project completion:

      i. all soil disturbance activities have ceased; and

      ii. all areas disturbed as of the project shutdown date have achieved *final stabilization*; and

      iii. all temporary, structural erosion and sediment control measures have been removed; and

      iv. all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational; and

      v. an as-built drawing has been prepared; or

   c. In accordance with Part I.G. Change of Owner or Operator; or

   d. The *owner or operator* has obtained coverage under an alternative general SPDES permit or an individual SPDES permit.

2. For *construction activities* that require *qualified inspector* inspections in accordance with Part IV.C.1. and have met Part V.A.1.a. or b., the *owner or operator* must have the *qualified inspector* perform a final site inspection prior to submitting the eNOT. The *qualified inspector* must, by signing the “Final Stabilization” and “Post-Construction Stormwater Management Practice(s)” certification statements on the eNOT, certify that all the requirements in Part V.A.1.a. or b. have been achieved.

3. For *construction activities* that are subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1. and meet Part V.A.1.a. or b., the *owner or operator* must have the *Traditional Land Use Control MS4 Operator(s)* sign the “MS4 Acceptance” statement on the eNOT in accordance with the requirements in Part VII.J. A *Traditional Land Use Control MS4 Operator* official, by signing this statement, determined that it is acceptable for the *owner or operator* to submit the eNOT in accordance with the requirements of this Part. A *Traditional Land Use Control MS4 Operator* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*’s final site inspection certification(s) when required in Part V.A.2.

4. For *construction activities* that require SMPs and meet Part V.A.1.a. or b., the *owner or operator* must, prior to submitting the eNOT, ensure one of the following:

   a. for SMP(s) that were constructed by a private entity, but will be owned, operated, and maintained by a public entity, the SMP(s) and any right-of-way(s) needed to operate and maintain such practice(s) have been deeded to the municipality in which the practice(s) is located; or

   b. for SMP(s) that are privately owned, but will be operated and maintained by a public entity, an executed operation and maintenance agreement is in place with the municipality that will operate and maintain the SMP(s); or

   c. for SMP(s) that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record; or

   d. for SMP(s) that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility, the *owner or operator* has policies and procedures in place that ensure operation and maintenance of the practices in accordance with the operation and maintenance plan.

5. An *owner or operator* that has met the requirements of Part V.A.1., 2., 3., and 4. must request termination of coverage under this permit by submitting a complete Notice of Termination form electronically using a NYSDEC approved form.[5]

   a. The owner's or operator's coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

[5] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

Part VI. Record Retention and Reporting

A. Record Retention

The *owner or operator* must retain a copy of the documents listed in Part I.E.3. and a copy of the LOT for a period of at least five years from the date that NYSDEC accepts a complete NOT submitted in accordance with Part V.

B. Reporting

Except for the eNOI, the signature forms associated with the eNOI, and the eNOT, all other written correspondence requested by NYSDEC, including individual permit applications, must be sent to the address of the appropriate DOW (SPDES) Program contact at the Regional Office listed in Appendix E.

Part VII. Standard Permit Requirements

For the purposes of this permit, examples of contractors and subcontractors include: third-party maintenance and construction contractors.

A. Duty to Comply

The *owner or operator*, and all contractors or subcontractors, must comply with all requirements of this permit. Any non-compliance with the requirements of this permit constitutes a violation of the New York State Environmental Conservation Law (ECL), and its implementing regulations, and is grounds for enforcement action. Filing of a request for termination of coverage under this permit, or a notification of planned changes or anticipated non-compliance, does not limit, diminish or stay compliance with any requirements of this permit.

B. Need to Halt or Reduce Activity Not a Defense

The necessity to halt or reduce the *construction activity* regulated by this permit, in order to maintain compliance with the requirements of this permit, must not be a defense in an enforcement action.

C. Penalties

There are substantial criminal, civil, and administrative penalties associated with violating the requirements of this permit. Fines of up to $37,500 per day for each

violation and imprisonment for up to 15 years may be assessed depending upon the nature and degree of the offense.

D. False Statements

Any person who knowingly makes any false material statement, representation, or certification in any application, record, report, or other document filed or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance must, upon conviction, be punished in accordance with ECL §71-1933 and or New York State Penal Law Articles 175 and 210.

E. Re-Opener Clause

Upon issuance of this permit, a determination has been made on the basis of a submitted Notice of Intent, plans, or other available information, that compliance with the specified permit requirements will reasonably protect classified water use and assure compliance with applicable *water quality standards*. Satisfaction of the requirements of this permit notwithstanding, if operation pursuant to this permit causes or contributes to a condition in contravention of State *water quality standards* or guidance values, or if NYSDEC determines that a modification is necessary to prevent impairment of the best use of the waters or to assure maintenance of *water quality standards* or compliance with other provisions of ECL Article 17 or the Clean Water Act (CWA), or any regulations adopted pursuant thereto, NYSDEC may require such modification and the Commissioner may require abatement action to be taken by the *owner or operator* and may also prohibit such operation until the modification has been implemented.

F. Duty to Mitigate

The *owner or operator*, and its contractors and subcontractors, must take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

G. Requiring Another General Permit or Individual SPDES Permit

NYSDEC may require any *owner or operator* authorized to *discharge* in accordance with this permit to apply for and obtain an individual SPDES permit or apply for authorization to *discharge* in accordance with another general SPDES permit.

1. Cases where an individual SPDES permit or authorization to discharge in accordance with another general SPDES permit may be required include, but is not limited to the following:

   a. the *owner or operator* is not in compliance with the conditions of this permit or does not meet the requirements for coverage under this permit; and

   b. a change has occurred in the availability of demonstrated technology or practices for the control or abatement of *pollutants* applicable to the *point source*; and

   c. new effluent limitation guidelines or new source performance standards are promulgated that are applicable to *point sources* authorized to *discharge* in accordance with this permit; and

   d. existing effluent limitation guidelines or new source performance standards that are applicable to *point sources* authorized to *discharge* in accordance with this permit are modified; and

   e. a water quality management plan containing requirements applicable to such *point sources* is approved by NYSDEC; and

   f. circumstances have changed since the time of the request to be covered so that the *owner or operator* is no longer appropriately controlled under this permit, or either a temporary or permanent reduction or elimination of the authorized *discharge* is necessary; and

   g. the *discharge* is in violation of section 17-0501 of the ECL; and

   h. the *discharge(s)* is a significant contributor of *pollutants*. In making this determination, NYSDEC may consider the following factors:

      i. the location of the *discharge(s)* with respect to *surface waters of the State*; and

      ii. the size of the *discharge(s)*; and

      iii. the quantity and nature of the *pollutants discharged* to *surface waters of the State*; and

      iv. other relevant factors including compliance with other provisions of ECL Article 17, or the CWA.

2. When NYSDEC requires any *owner or operator* authorized by this permit to apply for an individual SPDES permit as provided for in this subdivision, it must notify the *owner or operator* in writing that a permit application is required. This notice must include a brief statement of the reasons for this decision, an application

form, a statement setting a time for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from the *owner's or operator's* receipt of the notification letter, whereby the authorization to *discharge* under this permit must be terminated. NYSDEC may grant additional time upon demonstration, to the satisfaction of the RWE,[6] that additional time to apply for an alternative authorization is necessary or where NYSDEC has not provided a permit determination in accordance with 6 NYCRR Part 621.

3. When an individual SPDES permit is issued to an *owner or operator* authorized to *discharge* under this permit for the same *discharge(s)*, this permit authorization for *construction activities* authorized under the individual SPDES permit is automatically terminated on the effective date of the individual SPDES permit unless termination is earlier in accordance with 6 NYCRR Part 750.

H. Duty to Provide Information

The *owner or operator* must furnish to NYSDEC, within five business days, unless otherwise set forth by NYSDEC, any information that NYSDEC may request to determine whether cause exists to determine compliance with this permit or to determine whether cause exists for requiring an individual SPDES permit in accordance with 6 NYCRR 750-1.21(e) (see Part VII.G. Requiring Another General Permit or Individual Permit).

The *owner or operator* must make available to NYSDEC, for inspection and copying, or furnish to NYSDEC within 25 business days of receipt of a NYSDEC request for such information, any information retained in accordance with this permit.

Except for Part I.D.4. and 5. and Part I.G., the following applies: where the *owner or operator* becomes aware that it failed to submit any relevant facts on the Notice of Intent, or submitted incorrect information in a Notice of Intent or in any report to NYSDEC, the *owner or operator* must submit such facts or corrected information to NYSDEC within five business days.

I. Extension

In the event a new permit is not issued and effective prior to the expiration of this permit, and this permit is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, then the *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the requirements of this permit until a new permit is issued and effective.

[6] The Regional Water Manager where a DEC Region does not have a RWE.

J. Signatories and Certification

The Notice of Intent, Notice of Termination, and reports required by this permit must be signed as provided in 40 CFR §122.22.

1. All Notices of Intent and Notices of Termination must be signed as follows:

   a. For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

      (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or

      (ii) the manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for Notice of Intent or Notice of Termination requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   Note: NYSDEC does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §122.22(a)(1)(i). NYSDEC will presume that these responsible corporate officers have the requisite authority to sign the Notice of Intent or Notice of Termination unless the corporation has notified NYSDEC to the contrary. Corporate procedures governing authority to sign a Notice of Intent or Notice of Termination may provide for assignment or delegation to applicable corporate positions under 40 CFR §122.22(a)(1)(ii) rather than to specific individuals.

   b. For a partnership or sole proprietorship. By a general partner or the proprietor, respectively.

   c. For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

      1. the chief executive officer of the agency; or

      2. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. All reports required by this permit, and other information requested by NYSDEC, must be signed by a person described in Part VII.J.1., or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Part VII.J.1. or using the Duly Authorized Form, found on the DEC website; and

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

   c. The written authorization is submitted to NYSDEC.

3. Changes to authorization. If an authorization under Part VII.J.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the *construction activity*, a new authorization satisfying the requirements of Part VII.J.2. must be submitted to NYSDEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under Part VII.J.1. or 2. must make the following certification:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who

manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5. Electronic reporting. If documents described in Part VII.J.1. or 2. are submitted electronically by or on behalf of the *construction activity* with coverage under this permit, any person providing the electronic signature for such documents must meet all relevant requirements of this section, and must ensure that all of the relevant requirements of 40 CFR Part 3 (including, in all cases, subpart D to Part 3) (Cross-Media Electronic Reporting) and 40 CFR Part 127 (NPDES Electronic Reporting Requirements) are met for that submission.

K. Inspection and Entry

The *owner or operator* must allow NYSDEC, the USEPA Regional Administrator, the applicable county health department, or any authorized representatives of those entities, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the *discharge*, upon the presentation of credentials and other documents as may be required by law, to:

1. enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the requirements of this permit; and

2. have access to and copy at reasonable times, any records that must be kept under the requirements of this permit, including records required to be maintained for purposes of operation and maintenance; and

3. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

4. sample or monitor at reasonable times, for the purposes of assuring general SPDES permit compliance or as otherwise authorized by the CWA or ECL, any substances or parameters at any location; and

5. enter upon the property of any contributor to the regulated facility or activity under authority of the *owner or operator*.

L. Confidentiality of Information

The following must not be held confidential: this permit, the fact sheet for this permit, the name and address of any *owner or operator*, effluent data, the Notice of Intent, and information regarding the need to obtain an individual permit or an alternative general SPDES permit. This includes information submitted on forms themselves and any attachments used to supply information required by the forms (except information submitted on usage of substances). Upon the request of the *owner or operator*, NYSDEC must make determinations of confidentiality in accordance with 6 NYCRR Part 616, except as set forth in the previous sentence. Any information accorded confidential status must be disclosed to the Regional Administrator upon his or her written request. Prior to disclosing such information to the Regional Administrator, NYSDEC will notify the Regional Administrator of the confidential status of such information.

M. Other Permits May Be Required

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

N. NYSDEC Orders or Civil Decrees/Judgments

The issuance of this permit by the NYSDEC, and the coverage under this permit by the *owner or operator*, does not supersede, revoke, or rescind any existing order on consent or civil Decree/Judgment, or modification to any such documents or to any order issued by the Commissioner, or any of the terms, conditions, or requirements contained in such order or modification therefore, unless expressly noted.

O. Property Rights

Coverage under this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations, nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the *discharge* authorized.

P. Compliance with Interstate Standards

If the *construction activity* covered by this permit originates within the jurisdiction of an interstate water pollution control agency, then the *construction activity* must also comply with any applicable effluent standards or *water quality standards* promulgated by that interstate agency and as set forth in this permit for such *construction activities*.

Q. Oil and Hazardous Substance Liability

Coverage under this permit does not affect the imposition of responsibilities upon, or the institution of any legal action against, the *owner or operator* under section 311 of the CWA, which must be in conformance with regulations promulgated pursuant to section 311 governing the applicability of section 311 of the CWA to *discharges* from facilities with *NPDES* permits, nor must such issuance preclude the institution of any legal action or relieve the *owner or operator* from any responsibilities, liabilities, or penalties to which the *owner or operator* is or may be subject pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. section 9601 et seq. (CERCLA).

R. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, must not be affected thereby.

S. NYSDEC Approved Forms

The *owner or operator* must provide all relevant information that is requested by NYSDEC, and required by this permit, on all NYSDEC approved forms.

APPENDIX A – Abbreviations and Definitions

Abbreviations

APO – Agency Preservation Officer
BB – New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), dated November 2016
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
CPv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DM – New York State Stormwater Management Design Manual (Design Manual), dated July 31, 2024
DOW – Division of Water
EAF – Environmental Assessment Form
ECL – chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law
EPA – U.S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NYC – The City of New York
NYCDEP – The City of New York Department of Environmental Protection
NYSDEC – The New York State Department of Environmental Conservation
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RR – Runoff Reduction
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SMP – Post-Construction Stormwater Management Practice
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit. If a word is not italicized in the permit, use its common definition.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023).

Alter Hydrology from Pre- to Post-Development Conditions – the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer System – a sewer system which conveys sewage and *stormwater* through a single pipe system to a publicly owned treatment works.

Commence (Commencement of) Construction Activities – the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the *SWPPP*. See definition for "*Construction Activity(ies)*" also.

Common Plan of Development or Sale – a contiguous area where multiple separate and distinct *construction activities* are occurring, or may occur, under one plan. The "common plan" of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQR) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating *construction activities* may occur on a specific plot. A *common plan of development or sale* is comprised of two or more *phases*.

Common plan of development or sale does <u>not</u> include separate and distinct *construction activities* that are occurring, or may occur, under one plan that are at least 1/4 mile apart provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Construction Activity(ies) – identified within 40 CFR 122.26(b)(14)(x), 122.26(b)(15)(i), and 122.26(b)(15)(ii), any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, mechanized logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal.

Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, which is excluded from the calculation of the soil disturbance for a project. Routine maintenance includes, but is not limited to:

- Re-grading of gravel roads or parking lots; and
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of the ditch; and
- Replacement of existing culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of a ditch; and
- Replacement of existing bridges that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity beneath the bridges; and
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch); and
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*; and
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material; and
- Long-term use of equipment storage areas at or near highway maintenance facilities; and
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*; and
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts; and
- Maintenance of ski trails including brush hog use and mowing; and
- Above ground snowmaking pipe replacement; and
- Replacement of existing utility poles; etc.

Construction Site – the land area where *construction activity(ies)* will occur. See also the definitions for "*Commence (Commencement of) Construction Activities"* and "*Common Plan of Development or Sale."*

Dewatering – the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Directly Discharge(s)(ing) (to a specific surface waterbody) – runoff flows from a *construction site* by overland flow and the first point of *discharge* is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system and the first point of *discharge* from the separate storm sewer system is the specific surface waterbody.

Discharge(s)(d) – any addition of any *pollutant* to waters of the State through an outlet or *point source*.

Embankment – an earthen or rock slope that supports a road/highway.

Equivalent (Equivalence) – the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization – all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other *equivalent* stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

Historic Property – any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) – all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and compacted gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – not technologically possible, or not economically practicable and achievable considering best industry practices.

Minimize(ing)(ation) – reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

1. owned or operated by a State, city, town, village, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, *stormwater*, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA, that *discharges* to *surface waters of the State*; and

2. designed or used for collecting or conveying *stormwater*; and

3. which is not a *combined sewer system*; and

4. which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Natural Buffer(s) – an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – any land disturbance that does not meet the definition of *Redevelopment Activity* included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

Nonpoint Source(s) – any source of water pollution or *pollutants* which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank – flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator – the person, persons, or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit requirements.

Performance Criteria – the six performance criteria for each group of SMPs in Chapters 5 and 6 of the technical standard, New York State Stormwater Management Design Manual (DM), dated July 31, 2024. These include feasibility, conveyance, pretreatment, treatment, landscaping, and maintenance. It does not include the *Sizing Criteria* (i.e. WQv, RRv, CPv, Qp and Qf) in Part I.C.2. of the permit.

Phase – a defined area in which *construction activities* are occurring or will occur separate from other defined area(s).

Point Source – any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be *discharged*.

Pollutant(s) – dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast *discharged* into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq.

Qualified Inspector – a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, *New York State Erosion and Sediment Control Certificate Program* holder or other NYSDEC endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any SMPs that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional – a person that is knowledgeable in the principles and practices of *stormwater* management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other NYSDEC endorsed individual(s). Individuals preparing *SWPPPs* that require the SMP component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the *SWPPP* that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – the disturbance and reconstruction of existing *impervious area*, including *impervious areas* that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Renewable Energy – electricity or thermal energy generated by renewable energy systems through use of the following technologies: solar thermal, photovoltaics, on land and offshore wind, hydroelectric, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal, and fuel cells which do not utilize a fossil fuel resource in the process of generating electricity.

Site Limitations – site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical *site limitations* include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of *site limitations* shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – the criteria included in Part I.C.2 of the permit that are used to size SMPs. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

Steep Slope – land area designated on the current United States Department of Agriculture (USDA) Soil Survey as Soil Slope Phase D, (provided the map unit name or description is inclusive of slopes greater than 25%), or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Stormwater – that portion of precipitation that, once having fallen to the ground, is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of surface features, which flows or will flow off the land by surface runoff to waters of the State.

Streambank – the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – a project specific report, including construction drawings, that among other things: describes the *construction activity(ies)*, identifies the potential sources of pollution at the *construction site*; describes and shows the *stormwater* controls that will be used to control the *pollutants* (i.e. erosion and sediment controls; for many projects, includes SMPs); and identifies procedures the *owner or operator* will implement to comply with the requirements of the permit. See Part III of the permit for a complete description of the information that must be included in the *SWPPP*.

Surface Waters of the State – shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization – exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Load (TMDL) – the sum of the allowable loads of a single *pollutant* from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a *pollutant* that a waterbody can receive and still meet *water quality standard*s, and an allocation of that amount to the *pollutant's* sources. A TMDL stipulates Waste Load Allocations (WLA) for *point source discharge*s, Load Allocations (LA) for *nonpoint source*s, and a margin of safety (MOS).

Traditional Land Use Control MS4 Operator – a city, town, or village with land use control authority that is authorized to *discharge* under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Trained Contractor – an employee from the contracting (construction) company, identified in Part III.A.7., that has received four (4) hours of NYSDEC endorsed training

in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.7., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, *New York State Erosion and Sediment Control Certificate Program* holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity).

The *trained contractor* is responsible for the day-to-day implementation of the *SWPPP*.

Tree Clearing – *construction activities* limited to felling and removal of trees.

Tree clearing does not include hand felling and leaving the trees in place with no support from mechanized equipment, which is not considered *construction activity* requiring coverage under this permit.

Water Quality Standard – such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1

***CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following *construction activities* that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single-family home not located in one of the watersheds listed in Appendix C and not *directly discharging* to one of the 303(d) segments listed in Appendix D
- Single-family residential subdivisions with 25% or less *impervious cover* at total site build-out and not located in one of the watersheds listed in Appendix C and not *directly discharging* to one of the 303(d) segments listed in Appendix D
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that include construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.

The following *construction activities* that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

- All construction activities located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

Within the municipal boundaries of NYC:

- Stand-alone road reconstruction, where the total soil disturbance from only that road construction, is less than one (1) acre of land.

The following *construction activities*:

- Installation of underground linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation, *stormwater* retrofits, stream restoration, and resiliency projects that reconstruct shoreline areas to address sea level rise
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an *impervious cover*
- Cross-country ski trails, walking/hiking trails, and mountain biking trails, including a de minimis parking lot (maximum 10 spaces total, sized for passenger cars) with 35 feet minimum preservation of undisturbed area downgradient from the parking lot
- Dam rehabilitation (the structure of the dam itself)
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are not part of residential, commercial, or institutional development;
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path, or walking path.

Table 1 (Continued)
***CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following *construction activities*:

- Slope stabilization
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Vegetated open space (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) that do not *alter hydrology from pre- to post-development* conditions
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions
- Demolition where vegetation will be established, and no *redevelopment activity* is planned[1]
- Installation or replacement of either an overhead electric transmission line or a ski lift tower that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*.
- Solar array field areas that have tables elevated off the ground, spaced one table width apart, do not *alter hydrology from pre- to post-development conditions*, and address water quality volume and runoff reduction volume by maintaining sheet flow on slopes less than 8%.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that do not include construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions.
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary *impervious areas* that will be restored to pre-construction conditions once the *construction activity* is complete (in this context, "temporary" means the *impervious area* will be in place for two years or less)
- Other *construction activities* that do not include the construction or reconstruction of *impervious area*, and do not *alter hydrology from pre- to post-development* conditions, and are not listed in Table 2.

1. If the site is redeveloped in the future, a new eNOI must be submitted.

Table 2
***CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPS)**

The following *construction activities*:

- Single-family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix D
- Single-family home that disturbs five (5) or more acres of land
- Single-family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix D
- Single-family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% *impervious cover* at total site build-out
- Single-family residential subdivisions that involve soil disturbances of between 20,000 square feet and one (1) acre of land within the municipal boundaries of NYC with greater than 25% *impervious cover* at total site build-out
- Single-family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single-family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a *common plan of development or sale* that will ultimately disturb five (5) or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Creation of 5,000 square feet or more of *impervious area* in the municipal boundaries of NYC
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of *impervious area* (>5% of disturbed area) or *alter the hydrology from pre- to post-development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) that involves soil disturbance greater than five acres.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that involves soil disturbance greater than five acres and include the construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.
- Facility buildings, including ski lodges, restroom buildings, pumphouses, ski lift terminals, and maintenance and groomer garages
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills; including creation of landfills or capping landfills.
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTWs, water treatment plants, and water storage tanks
- Golf courses
- Office complexes

Table 2 (Continued)

***CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPS)**

The following *construction activities*:

- Permanent laydown yards and equipment storage lots
- Playgrounds that include the construction or reconstruction of *impervious area*
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surfaces
- Road construction or reconstruction, outside the municipal boundaries of NYC
- Road construction within the municipal boundaries of NYC
- Stand-alone road reconstruction, within the municipal boundaries of NYC where the total soil disturbance from that road reconstruction involves soil disturbance of one (1) acre or more of land
- Parking lot construction or reconstruction (as with all Table 2 bullets, this includes parking lots constructed as part of the *construction activities* listed in Table 1, unless a Table 1 bullet specifies otherwise)
- Athletic fields (natural grass) that include the construction or reconstruction of *impervious area* (>5% of disturbed area) or *alter the hydrology from pre- to post-development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations, and well drilling pads, surfaced with *impervious cover,* and constructed as part of an overhead electric transmission line, wind-power, cell tower, oil or gas well drilling, sewer or water main, ski lift, or other linear utility project
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of a residential, commercial or institutional development
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of highway construction or reconstruction
- Solar array field areas on slopes greater than 8% that cannot maintain sheet flow using management practices identified in the BB or the DM
- Solar array field areas on slopes less than 8% that will *alter the hydrology from pre- to post-development* conditions
- Solar array field areas with tables that are not elevated high enough to achieve *final stabilization* beneath the tables
- Traditional *impervious areas* associated with solar development (e.g. roads, buildings, transformers)
- Utility pads surfaced with *impervious cover*, including electric vehicle charging stations
- All other *construction activities* that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre- to post-development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of *construction activities* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs designed in conformance with the Enhanced Phosphorus Removal Standards included in the DM technical standard.

- Entire New York City Watershed located east of the Hudson River – Figure 1
- Onondaga Lake Watershed – Figure 2
- Greenwood Lake Watershed – Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

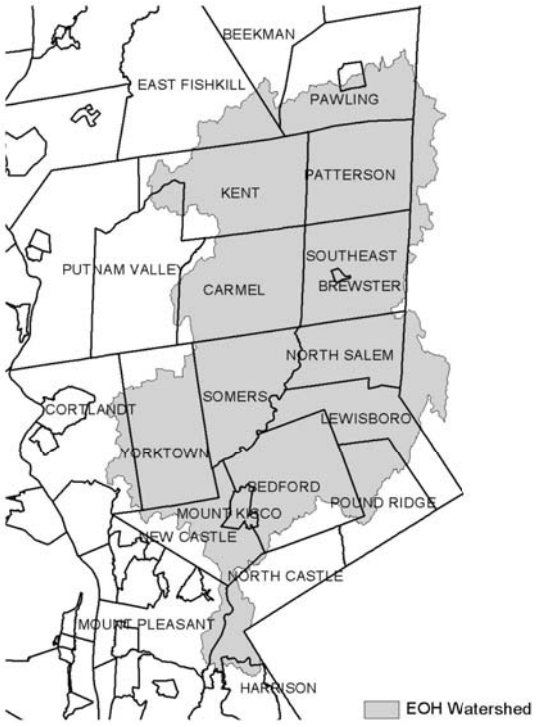


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed



Figure 4 - Oscawana Lake Watershed

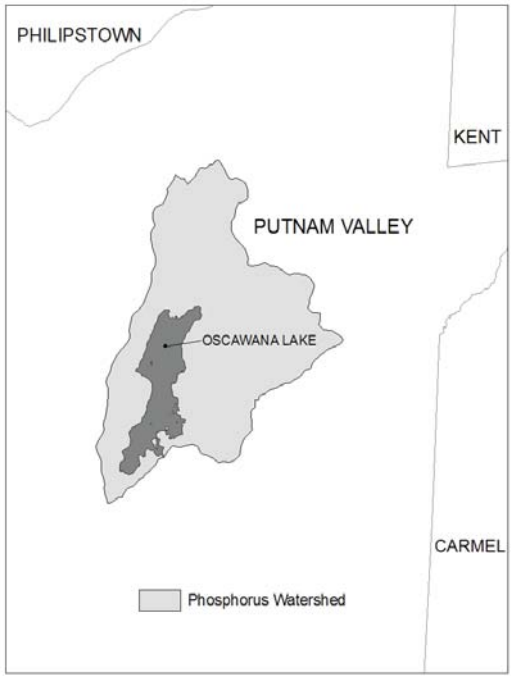
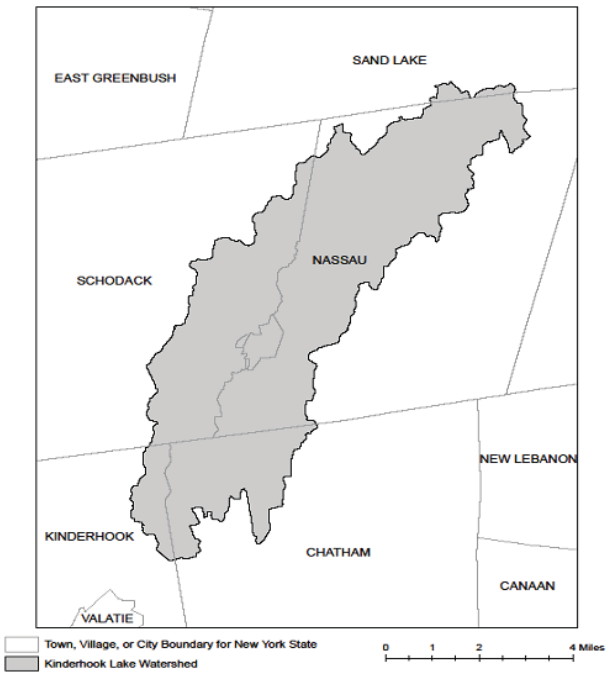


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Impaired Waterbodies (by Construction Related Pollutants)

List of waterbodies impaired by *pollutants* related to *construction activity*, including turbidity, silt/sediment, and nutrients (e.g. nitrogen, phosphorus). This list is a subset of "The Final New York State 2018 Section 303(d) List of Impaired Waters Requiring a TMDL" dated June 2020.

County	Waterbody	Pollutant
Albany	Ann Lee (Shakers) Pond, Stump Pond (1201-0096)	Phosphorus
Albany	Lawsons Lake (1301-0235)	Phosphorus
Allegany	Amity Lake, Saunders Pond (0403-0054)	Phosphorus
Allegany	Andover Pond (0403-0056)	Phosphorus
Bronx	Reservoir No.1/Lake Isle (1702-0075)	Phosphorus
Bronx	Van Cortlandt Lake (1702-0008)	Phosphorus
Broome	Blueberry, Laurel Lakes (1404-0033)	Phosphorus
Broome	Fly Pond, Deer Lake (1404-0038)	Phosphorus
Broome	Minor Tribs to Lower Susquehanna (0603-0044)	Phosphorus
Broome	Whitney Point Lake/Reservoir (0602-0004)	Phosphorus
Cattaraugus	Allegheny River/Reservoir (0201-0023)	Phosphorus
Cattaraugus	Beaver Lake/Alma Pond (0201-0073)	Phosphorus
Cattaraugus	Case Lake (0201-0020)	Phosphorus
Cattaraugus	Linlyco/Club Pond (0201-0035)	Phosphorus
Cayuga	Duck Lake (0704-0025)	Phosphorus
Cayuga	Owasco Inlet, Upper, and tribs (0706-0014)	Nutrients
Chautauqua	Chadakoin River and tribs (0202-0018)	Phosphorus
Chautauqua	Hulburt/Clymer Pond (0202-0079)	Phosphorus
Chautauqua	Middle Cassadaga Lake (0202-0002)	Phosphorus
Clinton	Great Chazy River, Lower, Main Stem (1002-0001)	Silt/Sediment
Columbia	Robinson Pond (1308-0003)	Phosphorus
Cortland	Dean Pond (0602-0077)	Phosphorus
Dutchess	Fallkill Creek (1301-0087)	Phosphorus
Dutchess	Hillside Lake (1304-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Silt/Sediment
Erie	Beeman Creek and tribs (0102-0030)	Phosphorus
Erie	Delaware Park Pond (0101-0026)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Silt/Sediment
Erie	Green Lake (0101-0038)	Phosphorus
Erie	Little Sister Creek, Lower, and tribs (0104-0045)	Phosphorus
Erie	Murder Creek, Lower, and tribs (0102-0031)	Phosphorus

Erie	Rush Creek and tribs (0104-0018)	Phosphorus
Erie	Scajaquada Creek, Lower, and tribs (0101-0023)	Phosphorus
Erie	Scajaquada Creek, Middle, and tribs (0101-0033)	Phosphorus
Erie	Scajaquada Creek, Upper, and tribs (0101-0034)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Silt/Sediment
Genesee	Bigelow Creek and tribs (0402-0016)	Phosphorus
Genesee	Black Creek, Middle, and minor tribs (0402 0028)	Phosphorus
Genesee	Black Creek, Upper, and minor tribs (0402-0048)	Phosphorus
Genesee	Bowen Brook and tribs (0102-0036)	Phosphorus
Genesee	LeRoy Reservoir (0402-0003)	Phosphorus
Genesee	Mill Pond (0402-0050)	Phosphorus
Genesee	Oak Orchard Cr, Upper, and tribs (0301-0014)	Phosphorus
Genesee	Oatka Creek, Middle, and minor tribs (0402-0031)	Phosphorus
Genessee	Tonawanda Cr, Middle, Main Stem (0102-0002)	Phosphorus
Greene	Schoharie Reservoir (1202-0012)	Silt/Sediment
Greene	Sleepy Hollow Lake (1301-0059)	Silt/Sediment
Herkimer	Steele Creek tribs (1201-0197)	Phosphorus
Herkimer	Steele Creek tribs (1201-0197)	Silt/Sediment
Kings	Hendrix Creek (1701-0006) 18	Nitrogen
Kings	Prospect Park Lake (1701-0196)	Phosphorus
Lewis	Mill Creek/South Branch, and tribs (0801-0200)	Nutrients
Livingston	Christie Creek and tribs (0402-0060)	Phosphorus
Livingston	Conesus Lake (0402-0004)	Phosphorus
Livingston	Mill Creek and minor tribs (0404-0011)	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs (0402-0033)	Phosphorus
Monroe	Buck Pond (0301-0017)	Phosphorus
Monroe	Cranberry Pond (0301-0016)	Phosphorus
Monroe	Durand, Eastman Lakes (0302-0037)	Phosphorus
Monroe	Lake Ontario Shoreline, Western (0301-0069) 9	Phosphorus
Monroe	Long Pond (0301-0015)	Phosphorus
Monroe	Mill Creek and tribs (0302-0025)	Phosphorus 2
Monroe	Mill Creek/Blue Pond Outlet and tribs (0402-0049)	Phosphorus
Monroe	Minor Tribs to Irondequoit Bay (0302-0038)	Phosphorus
Monroe	Rochester Embayment - East (0302-0002) [9]	Phosphorus
Monroe	Rochester Embayment - West (0301-0068) 9	Phosphorus
Monroe	Shipbuilders Creek and tribs (0302-0026)	Phosphorus 2
Monroe	Thomas Creek/White Brook and tribs (0302-0023)	Phosphorus

Nassau	Bannister Creek/Bay (1701-0380)	Nitrogen
Nassau	Beaver Lake (1702-0152)	Phosphorus
Nassau	Browswere Bay (1701-0383)	Nitrogen
Nassau	Camaans Pond (1701-0052)	Phosphorus
Nassau	East Meadow Brook, Upper, and tribs (1701-0211)	Silt/Sediment
Nassau	East Rockaway Channel (1701-0381)	Nitrogen
Nassau	Glen Cove Creek, Lower, and tribs (1702-0146)	Silt/Sediment
Nassau	Grant Park Pond (1701-0054)	Phosphorus
Nassau	Hempstead Bay, Broad Channel (1701-0032)	Nitrogen
Nassau	Hempstead Lake (1701-0015)	Phosphorus
Nassau	Hewlett Bay (1701-0382)	Nitrogen
Nassau	Hog Island Channel (1701-0220)	Nitrogen
Nassau	Massapequa Creek, Upper, and tribs (1701-0174)	Phosphorus
Nassau	Milburn/Parsonage Creeks, Upp, and tribs (1701-0212)	Phosphorus
Nassau	Reynolds Channel, East (1701-0215) [12]	Nitrogen
Nassau	Reynolds Channel, West (1701-0216) 12	Nitrogen
Nassau	Tidal Tribs to Hempstead Bay (1701-0218)	Nitrogen
Nassau	Tribs (fresh) to East Bay (1701-0204)	Silt/Sediment
Nassau	Tribs (fresh) to East Bay (1701-0204)	Phosphorus
Nassau	Tribs to Smith Pond/Halls Pond (1701-0221)	Phosphorus
Nassau	Woodmere Channel (1701-0219)	Nitrogen
New York	Harlem Meer (1702-0103)	Phosphorus
New York	The Lake in Central Park (1702-0105)	Phosphorus
Niagara	Bergholtz Creek and tribs (0101-0004)	Phosphorus
Niagara	Hyde Park Lake (0101-0030)	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0053) 9	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0072) 9	Phosphorus
Oneida	Ballou, Nail Creeks (1201-0203)	Phosphorus
Onondaga	Ley Creek and tribs (0702-0001) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nitrogen (NH3, NO2)
Onondaga	Onondaga Creek, Lower (0702-0023) 10	Nutrients (phosphorus)
Onondaga	Onondaga Creek, Lower, and tribs (0702-0023)	Turbidity
Onondaga	Onondaga Creek, Middle, and tribs (0702-0004)	Turbidity
Onondaga	Onondaga Creek, Upper, and tribs (0702-0024)	Turbidity
Ontario	Great Brook and minor tribs (0704-0034)	Phosphorus 2
Ontario	Great Brook and minor tribs (0704-0034)	Silt/Sediment

Ontario	Hemlock Lake Outlet and minor tribs (0402-0013)	Phosphorus
Ontario	Honeoye Lake (0402-0032)	Phosphorus
Orange	Brown Pond Reservoir (1303-0013)	Phosphorus
Orange	Lake Washington (1303-0012)	Phosphorus
Orange	Minor Tribs to Middle Wallkill (1306-0061)	Phosphorus
Orange	Monhagen Brook and tribs (1306-0074)	Phosphorus
Orange	Orange Lake (1301-0008) [16]	Phosphorus
Orange	Quaker Creek and tribs (1306-0025)	Phosphorus
Orange	Wallkill River, Middle, Main Stem (1306-0038)	Phosphorus
Orange	Wallkill River, Upper, and Minor tribs (1306-0017)	Phosphorus
Orleans	Glenvwood Lake (0301-0041)	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0070) 9	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0071) 9	Phosphorus
Oswego	Lake Neatahwanta (0701-0018)	Nutrients (phosphorus)
Oswego	Pleasant Lake (0703-0047)	Phosphorus
Putnam	Lost Lake, Putnam Lake (1302-0053)	Phosphorus
Putnam	Minor Tribs to Croton Falls Reservoir (1302-0001)	Phosphorus
Queens	Bergen Basin (1701-0009) 18	Nitrogen
Queens	Jamaica Bay, Eastern, and tribs, Queens (1701-0005) 18	Nitrogen
Queens	Kissena Lake (1702-0258)	Phosphorus
Queens	Meadow Lake (1702-0030)	Phosphorus
Queens	Shellbank Basin (1701-0001) 18	Nitrogen
Queens	Willow Lake (1702-0031)	Phosphorus
Rensselaer	Nassau Lake (1310-0001)	Phosphorus
Rensselaer	Snyders Lake (1301-0043)	Phosphorus
Richmond	Grassmere Lake/Bradys Pond (1701-0357)	Phosphorus
Rockland	Congers Lake, Swartout Lake (1501-0019)	Phosphorus
Rockland	Rockland Lake (1501-0021)	Phosphorus
Saratoga	Ballston Lake (1101-0036)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Silt/Sediment
Saratoga	Lake Lonely (1101-0034)	Phosphorus
Saratoga	Round Lake (1101-0060)	Phosphorus
Saratoga	Tribs to Lake Lonely (1101-0001)	Phosphorus
Schenectady	Collins Lake (1201-0077)	Phosphorus
Schenectady	Duane Lake (1311-0006)	Phosphorus
Schenectady Lake	Mariaville Lake (1201-0113)	Phosphorus
Schuyler	Cayuta Lake (0603-0005)	Phosphorus

Seneca	Reeder Creek and tribs (0705-0074)	Phosphorus
St.Lawrence	Black Lake Outlet, Black Lake (0906-0001)	Phosphorus
St.Lawrence	Fish Creek and minor tribs (0906-0026)	Phosphorus
Steuben	Smith Pond (0502-0012)	Phosphorus
Suffolk	Agawam Lake (1701-0117)	Phosphorus
Suffolk	Big/Little Fresh Ponds (1701-0125)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Silt/Sediment
Suffolk	Fresh Pond (1701-0241)	Phosphorus
Suffolk	Great South Bay, East (1701-0039)	Nitrogen
Suffolk	Great South Bay, Middle (1701-0040)	Nitrogen
Suffolk	Great South Bay, West (1701-0173)	Nitrogen
Suffolk	Lake Ronkonkoma (1701-0020)	Phosphorus
Suffolk	Mattituck/Marratooka Pond (1701-0129)	Phosphorus
Suffolk	Mill and Seven Ponds (1701-0113)	Phosphorus
Suffolk	Millers Pond (1702-0013)	Phosphorus
Suffolk	Moriches Bay, East (1701-0305)	Nitrogen
Suffolk	Moriches Bay, West (1701-0038)	Nitrogen
Suffolk	Quantuck Bay (1701-0042)	Nitrogen
Suffolk	Shinnecock Bay and Inlet (1701-0033)	Nitrogen
Suffolk	Tidal Tribs to West Moriches Bay (1701-0312)	Nitrogen
Sullivan	Bodine, Mongomery Lakes (1401-0091)	Phosphorus
Sullivan	Davies Lake (1402-0047)	Phosphorus
Sullivan	Evens Lake (1402-0004)	Phosphorus
Sullivan	Pleasure Lake (1402-0055)	Phosphorus
Sullivan	Swan Lake (1401-0063)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Silt/Sediment
Ulster	Ashokan Reservoir (1307-0004)	Silt/Sediment
Ulster	Esopus Creek, Lower, Main Stem (1307-0010) [17]	Turbidity
Ulster	Esopus Creek, Middle, Main Stem (1307-0003) 17	Turbidity
Ulster	Esopus Creek, Upper, and minor tribs (1307-0007)[3]	Silt/Sediment
Ulster	Wallkill River, Lower, Main Stem (1306-0027)	Phosphorus
Warren	Hague Brook and tribs (1006-0006)	Silt/Sediment
Warren	Huddle/Finkle Brooks and tribs (1006-0003)	Silt/Sediment
Warren	Indian Brook and tribs (1006-0002)	Silt/Sediment
Warren	Lake George (1006-0016) and tribs	Silt/Sediment
Warren	Tribs to Lake George, East Shore (1006-0020)	Silt/Sediment
Warren	Tribs to Lake George, Lk.George Village (1006-0008)	Silt/Sediment

Washington	Wood Cr/Champlain Canal and tribs (1005-0036)	Phosphorus
Westchester	Lake Katonah (1302-0136)	Phosphorus
Westchester	Lake Lincolndale (1302-0089)	Phosphorus
Westchester	Lake Meahagh (1301-0053)	Phosphorus
Westchester	Lake Mohegan (1301-0149)	Phosphorus
Westchester	Lake Shenorock (1302-0083)	Phosphorus
Westchester	Mamaroneck River, Lower (1702-0071)	Silt/Sediment
Westchester	Mamaroneck River, Upp, & minor tribs (1702-0123)	Silt/Sediment
Westchester	Saw Mill River (1301-0007)	Phosphorus
Westchester	Saw Mill River, Middle, and tribs (1301-0100)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Silt/Sedimnt
Westchester	Silver Lake (1702-0040)	Phosphorus
Westchester	Teatown Lake (1302-0150)	Phosphorus
Westchester	Truesdale Lake (1302-0054)	Phosphorus
Westchester	Wallace Pond (1301-0140)	Phosphorus

APPENDIX E – List of NYSDEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, Ny 12561-1696 Tel. (845) 256-3059	220 White Plains Road, Suite 110 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1130 North Westcott Road Schenectady, Ny 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, Ny 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, Ny 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, Ny 12885-1172 Tel. (518) 623-1200
6	Herkimer, Jefferson, Lewis, Oneida and St. Lawrence	State Office Building 317 Washiington Street Watertown, NY 13601-3787 Tel. (315) 785-2245	State Office Building 207 Genesee Street Utica, NY 13501-2885 Tel. (315) 793-2554
7	Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins	5786 Widewaters Parkway Syracuse, NY 13214-1867 Tel. (315) 426-7438	5786 Widewaters Parkway Syracuse, NY 13214-1867 Tel. (315) 426-7500
8	Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates	6274 East Avon-Lima Roadavon, NY 14414-9519 Tel. (585) 226-2466	6274 East Avon-Lima Rd. Avon, NY 14414-9519 Tel. (585) 226-2466
9	Allegany, Cattaraugus, Chautauqua, Erie, Niagara and Wyoming	700 Delaware Avenue Buffalo, NY 14209-2999 Tel. (716) 851-7165	700 Delaware Avenue Buffalo, NY 14209-2999 Tel. (716) 851-7070

APPENDIX F – SWPPP Preparer Certification Form

The SWPPP Preparer Certification Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:

eNOI Submission ID:

Owner/Operator Name:

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SWPPP Preparer First Name | MI | SWPPP Preparer Last Name

Signature | Date

Revised: January 2025

APPENDIX G – MS4 SWPPP Acceptance Form

The MS4 SWPPP Acceptance Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4 Operator:
12. MS4 SPDES Permit Identification Number: NYR20A
13. Street Address:
14. City/State/Zip:
15. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in section II. of this form has been reviewed and meets the substantive requirements in the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP). Note: The MS4 Operator, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 Operator does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name[1]:

Title/Position:

Signature:

Date:

VI. Additional Information

[1] Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.

(NYSDEC - MS4 SWPPP Acceptance Form - January 2025)

APPENDIX H – NYCDEP SWPPP Acceptance/Approval Form

The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval form required by this permit begins on the following page.

THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

SWPPP Acceptance/Approval

Application Number:

I. Project Owner/Operator Information

1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:
6. Street Address:
7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance/Approval

8. SWPPP Reviewed by:
9. Title/Position: /
10. Date Final SWPPP Reviewed and Accepted:
11. Acceptance/Approval Expiration Date:

IV. Regulated MS4 Information for projects that require coverage under the NY State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity

12. Name of MS4: *CITY OF NEW YORK*
13. MS4 SPDES Permit Identification Number: *NY-0287890*
14. Contact Person:
15. Street Address: *59-17 Junction Blvd. 9th Floor*
16. City/State/Zip: *Flushing, NY 11373*
17. Telephone Number:

Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.

THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).

Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Conditions of Acceptance/Approval and Additional Information

Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.

APPENDIX I – MS4 No Jurisdiction Form

The MS4 No Jurisdiction Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

MS4 No Jurisdiction Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

II. Project Site Information

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. eNOI Submission ID:

III. Traditional Land Use Control MS4 Operator Information

a. Name of MS4 Operator:

b. MS4 SPDES Permit ID Number: NYR20A

c. Street Address:

d. City/State/Zip:

e. Telephone Number:

IV. Certification Statement

In accordance with CGP Part I.D.2.b.ii.3., I hereby certify that the Traditional Land Use Control MS4 Operator identified in section III. of this form does not have review authority over the construction project identified in section II. of this form, which is owned/operated by the entity identified in section I. of this form. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

a. Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.:

b. Title/Position:

c. Signature:

d. Date:

APPENDIX J – Owner/Operator Certification Form

The Owner/Operator Certification Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.

Project/Site Name: _____

eNOI Submission ID: _____

eNOI Submitted by: ☐ **Owner/Operator** ☐ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator First Name MI Owner/Operator Last Name

_____
Signature

_____
Date

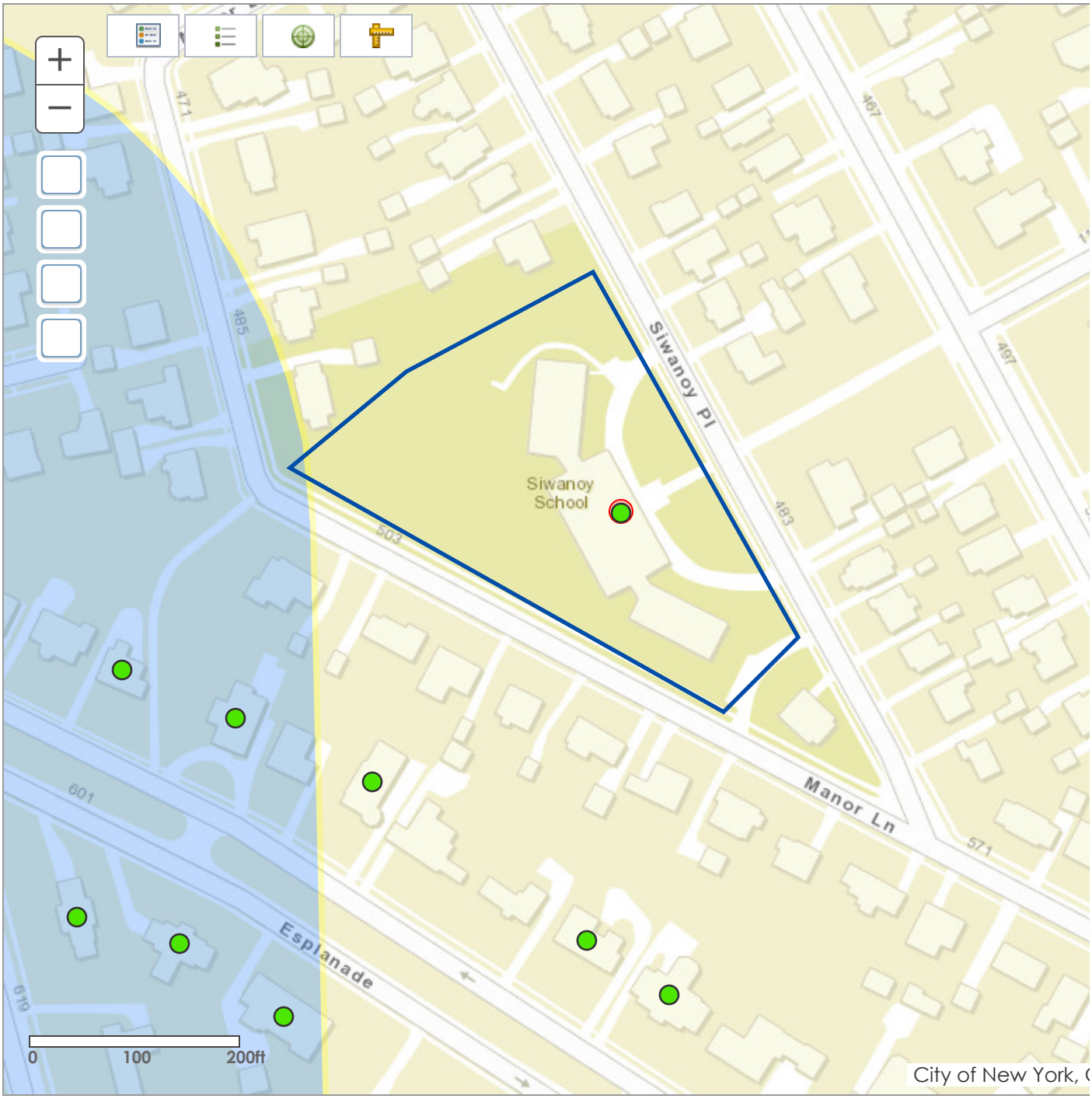
Revised: January 2025

Appendix J

Historic Preservation/Endangered Species Documentation

CRIS NYS Cultural Resource Information System

HOME SUBMIT SEARCH COMMUNICATE



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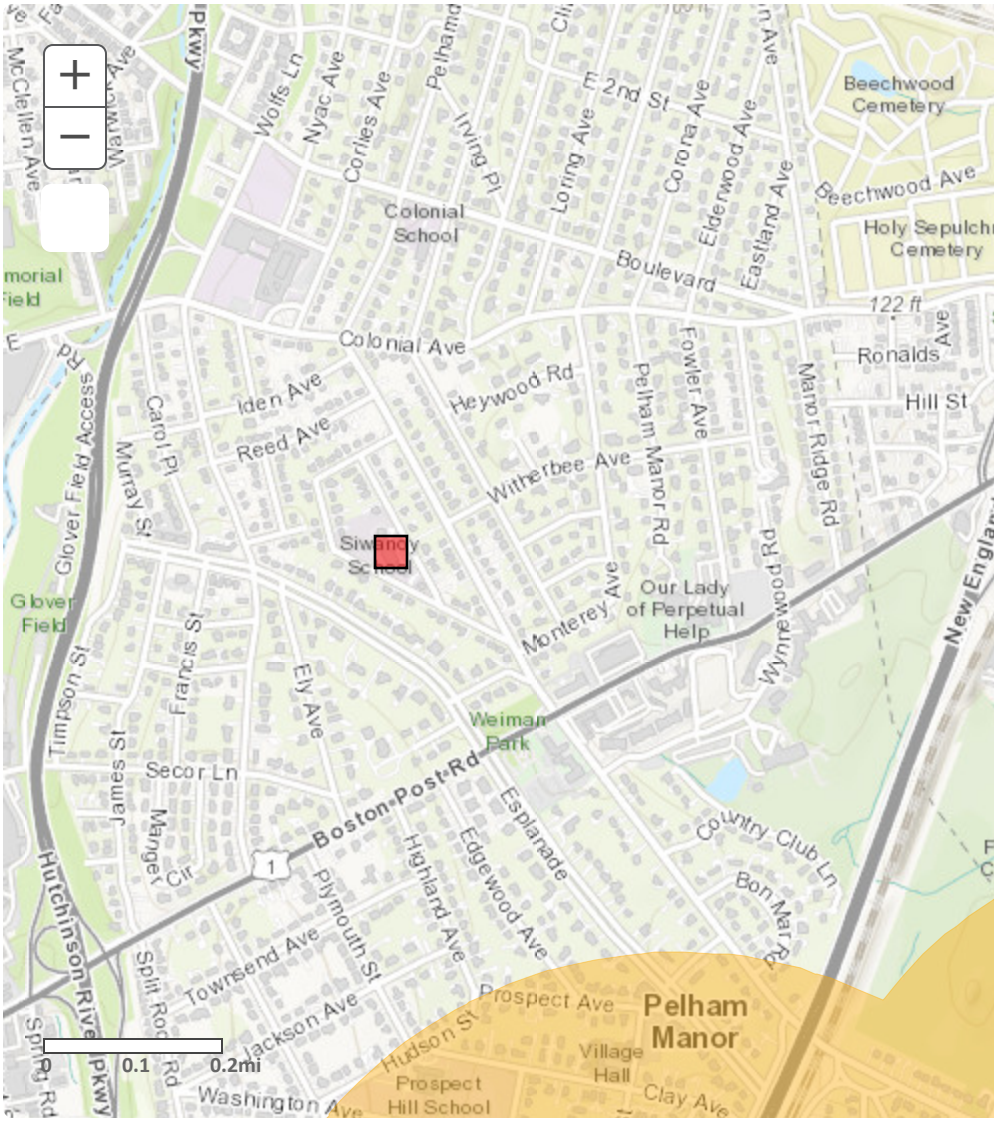
An official website of New York State.
Here's how you know

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Environmental Resource Mapper

Base Map: Topographical Using this map

- Search
- Tools
- **Layers and Legend**
  - Mussel Screening Streams
  - ☑ Significant Natural Communities
  - Natural Communities Near This Location
  - ☑ Rare Plants or Animals
  - ☐ Ten Year Travel Time
  - ☐ Special Groundwater Protection Areas
  - ☐ Base Flood Elevation
- Wetland Layers
- Reference Layers
- Tell Me More...
- Need A Permit?
- Contacts



Appendix K

Deep Ripping and De-compaction (DEC, 2008)

New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

New York State
Department of Environmental Conservation

Document Prepared by:

John E. Lacey,
Land Resource Consultant and Environmental Compliance Monitor
(Formerly with the Division of Agricultural Protection and Development Services,
NYS Dept. of Agriculture & Markets)

Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

The two-phase practice of 1) "Deep Ripping;" and 2) "Decompaction" (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil's water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access corridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.



Fig. 1. A typical deep ripping phase of this practice, during the first in a series of progressively deeper "rips" through severely compressed subsoil.

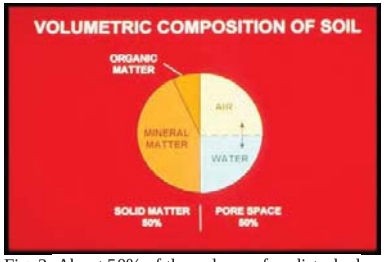


Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterallly) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).



Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

Soil permeability, soil drainage and cropland productivity were restored. For broader construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maneuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures
- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures
- Decreases runoff volume generated and provides hydrologic source control
- May be planned for application in feasible open locations either alone or in

conjunction with plans for structural practices (e.g., subsurface drain line or infiltration basin) serving the same or contiguous areas

- Promotes successful long-term revegetation by restoring soil permeability, drainage and water holding capacity for healthy (rather than restricted) root-system development of trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet periods and burnout during dry periods.

Feasibility/Limitations

The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as: the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing (soil moisture) for implementation; the space-related freedom of equipment/implement maneuverability (noted above in **Recommended Application of Practice**), and by the proper selection and operation of tractor and implements (explained below in **Design Guidance**). The more notable site-related factors include:

Soil

In the undisturbed condition, each identified soil type comprising a site is grouped into one of four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a range of characteristics including soil texture, drainage capability when thoroughly wet, and depth to water table. The natural rates of infiltration and transmission of soil-water through the undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission of soil-water and a moderately high runoff potential influenced by soil texture and slope; while soils in Group D have exceptionally slow rates of infiltration and transmission of soil-water, and high runoff potential.

In Figure 4, the profile displays the undisturbed horizons of a soil in Hydrologic Soil Group C and the naturally slow rate of infiltration through the subsoil. The slow rate of infiltration begins immediately below the topsoil horizon (30 cm), due to the limited amount of macro pores, e.g.: natural subsoil fractures, worm holes and root channels. Infiltration after the construction-induced mixing and compression of such subsoil material is virtually absent; but can be restored back to this natural level with the two-phase practice of deep ripping and decompaction, followed by the permanent establishment of an appropriate, deep taproot

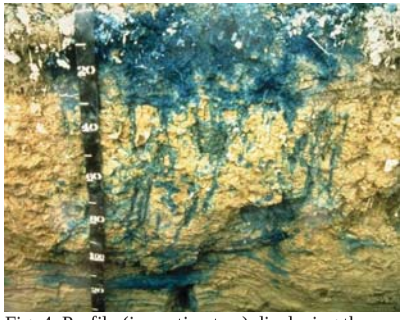


Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-induced mixing and compression of such subsoil material can be notably rehabilitated with the Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed for all rehabilitated soils.

Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural fragipan zone, beginning about 12 to 18 inches (30 – 45cm), below surface. Although soils in Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and fostering infiltration to a level equal to that of pre-disturbance.

Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface, influenced by a clay or other highly impervious layer of material. In many locations with clay subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added impact on infiltration; and structural runoff control practices rather than Deep Ripping and Decompaction should be considered.

The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken into account.

Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock, are not conducive to deep ripping and decompation (subsoiling); and other measures may be more practical.

Slope

The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most practical on flat, gentle and moderate slopes. In some situations, such as but not limited to temporary construction access corridors, inclusion areas that are moderately steep along a project's otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited instances of moderate steepness on other projects, however, the post-construction land use and the relative alignment of the potential ripping and decompaction work in relation to the lay of the slope should be reviewed for safety and practicality. In broad construction areas predominated by moderately steep or steep slopes, the practice is generally not used.

Local Weather/Timing/Soil Moisture

Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a “plastic” or “liquid” state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the “slicing and smearing” of the material or added “squeezing and compression” instead of the necessary fracturing. Ample drying time is needed for a “rippable” soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

The “poor man’s Atterberg field test” for soil plasticity is a simple “hand-roll” method used for quick, on-site determination of whether or not the moisture level of the affected soil material is low enough for: effective deep ripping of subsoil; respreading of topsoil in a friable state; and final decompaction (deep subsoiling). Using a sample of soil material obtained from the planned bottom depth of ripping, e.g.: 20 - 24 inches below exposed subsoil surface, the sample is hand rolled between the palms down to a 1/8-inch diameter thread. (Use the same test for stored topsoil material before respreading on the site.) If the respective soil sample crumbles apart in segments no greater than 3/8 of an inch long, by the time it is rolled down to 1/8 inch diameter, it is low enough in moisture for deep ripping (or topsoil replacement), and decompaction. Conversely, as shown in Figure 5, if the rolled sample stretches out in increments greater than 3/8 of an inch long before crumbling, it is in a “plastic” state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.

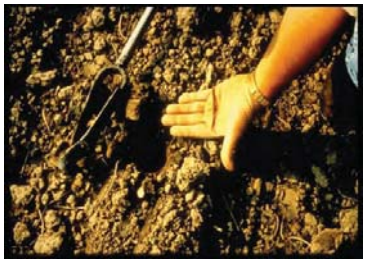


Fig. 5. Augered from a depth of 19 inches below the surface of the replaced topsoil, this subsoil sample was hand rolled to a 1/8-inch diameter. The test shows the soil at this site stretches out too far without crumbling; it indicates the material is in a plastic state of consistence, too wet for final decompaction (deep subsoiling) at this time.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoiling), is implementing the practice in its distinct, two-phase process:

1) Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, “decompaction,” mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area’s soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only “scarify” the uppermost surface portion of the mass of compacted subsoil material. The term “chisel plow” is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).



Fig. 6. A light duty chisel implement, not adequate for either the deep ripping or decompaction (deep subsoiling) phase.



Fig. 7. One of several variations of an agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a “heavy duty” agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the subsoil and topsoil layers while laterally and vertically fracturing the upper half of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like “lifting and shattering” action up through the soil layers as it is pulled.

Pulling-Power of Equipment

Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At this slow and managed rate of operating speed, maximum functional performance is sustained by the tractor and the implement performing the soil fracturing. Referring to Figure 8, the implement is the 6-leg version of the deep angled-leg subsoiler. Its two outside legs are "chained up" so that only four legs will be engaged (at the maximum depth), requiring no less than 160 hp, (rather than 240 hp) of pull. The 4-wheel drive, articulated-frame tractor in Figure 8 is 174 hp. It will be decompacting this unobstructed, former construction access area simultaneously through 11 inches of replaced topsoil and the upper 12 inches of the previously deep-ripped subsoil. In constricted areas of Phase 1) Deep Ripping, a medium-size tractor with adequate hp, such as the one in Figure 9 pulling a 3-shank deep ripper, may be more maneuverable.



Fig. 8. A deep, angled-leg subsoiler, ideal for Phase 2 decompaction of after the topsoil layer is graded on top of the ripped subsoil.



Fig. 9. This medium tractor is pulling a 3-shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Some industrial-grade variations of ripping implements are attached to power graders and bulldozers. Although highly durable, they are generally not recommended. Typically, the shanks or "teeth" of these rippers are too short and stout; and they are mounted too far apart to achieve the well-distributed type of lateral and vertical fracturing of the soil materials necessary to restore soil permeability and infiltration. In addition, the power graders and bulldozers, as pullers, are far less maneuverable for turns and patterns than the tractor.

Depth and Patterns of Movement

As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.



Fig. 10. An early pass with a 3-shank deep ripper penetrating only 8 inches into this worksite's severely compressed subsoil.



Fig. 11. A repeat run of the 3-shank ripper along the same patterned pass area as Fig. 9; here, incrementally reaching 18 of the needed 22 inches of subsoil fracture.

Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the full depth of Decompation (subsoiling), from the beginning.

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

pass of the implement's legs or shanks evenly staggered between those from the previous pass. This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches between each shank or leg. The staggered return pass ensures lateral and vertical fracturing actuated every 12 to 15 inches across the densely compressed soil mass.

Large, Unobstructed Areas
For larger easy areas, use the standard patterns of movement:

- The first series (pattern) of passes is applied lengthwise, parallel with the longest spread of the site; gradually progressing across the site's width, with each successive pass.

- The second series runs obliquely, crossing the first series at an angle of about 45 degrees.

- The third series runs at right angle (or 90 degrees), to the first series to complete the fracturing and shattering on severely compacted sites, and avoid leaving large unbroken blocks of compressed soil material. (In certain instances, the third series may be optional, depending on how thoroughly the first two series loosen the material and eliminate large chunks/blocks of material as verified by tests with a ¾-inch cone penetrometer.)



Fig. 12. Moderately dry topsoil is being replaced on the affected site now that Phase 1 deep ripping of the compressed subsoil is complete.



Fig. 13. The same deep, angled-leg subsoiler shown in Fig. 7 is engaged at maximum depth for Phase 2, decompaction (deep soiling), of the replaced topsoil and the upper subsoil materials.

Corridors
In long corridors of limited width and less maneuverability than larger sites, e.g.: along compacted areas used as temporary construction access, a modified series of pattern passes are used.

- First, apply the same initial lengthwise, parallel series of passes described above.

- A second series of passes makes a broad "S" shaped pattern of rips, continually and gradually alternating the "S" curves between opposite edges inside the compacted corridor.

- The third and final series again uses the broad, alternating S pattern, but it is "flip-flopped" to continually cross the previous S pattern along the corridor's centerline. This final series of the S pattern curves back along the edge areas skipped by the second series.

Maintenance and Cost

Once the two-phase practice of Deep Ripping and Decompation is completed, two items are essential for maintaining a site's soil porosity and permeability for infiltration. They are: planting and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see Figure 15); and keeping the site free of traffic or other weight loads.

Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the proper seeding ratio of one or more perennial species with a deep taproot system and the proper amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is generally limited to the successful perennial (long-term) landscape ground cover; as long as no weight-bearing force of soil compaction is applied.



Fig. 14. The severely compacted soil of a temporary construction yard used daily by heavy equipment for four months; shown before deep ripping, topsoil replacement, and decompaction.



Fig. 15. The same site as Fig. 14 after deep ripping of the exposed subsoil, topsoil replacement, decompaction through the topsoil and upper subsoil and final surface tillage and revegetation to maintain soil permeability and infiltration.

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland.The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, as little as one acre may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at $1800 per day, the net cost is $900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs $675 per acre for a combined total of $1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

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- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

Internet Access:

- Examples of implements:

V-Rippers. Access by internet search of *John Deere Ag -New Equipment for 915* (larger-frame model) *V-Rippe*; and, *for 913* (smaller-frame model) *V-Ripper*. Deep, angled-leg subsoiler. Access by internet search of: B*igham Brothers Shear Bolt Paratill-Subsoiler*. http://salesmanual.deere.com/sales/salesmanual/en_NA/primary_tillage/2008/feature/rippers/915v_pattern_frame.html?sbu=ag&link=prodcat Last visited March 08.

- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*
- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester.* http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.
2. Section 012500 "Substitution Procedures" for requests for substitutions.
3. Section 014200 "References" for applicable industry standards for products specified.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

    a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Mechanical Materials and Equipment: When two or more items of same material or equipment are required (pumps, valves, air conditioning units, etc.), they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in the work, except as otherwise indicated. Provide products which are compatible within systems and other connected items.

C. Asbestos in Materials: All products submitted for use and incorporated into this project shall be asbestos free.

D. Mercury-Free Products: All products submitted for use and incorporated into this Project shall be mercury-free. In the absence of mercury-free products, provide products with the lowest amount of mercury possible.

E. Lead-Free Products: All products submitted for use and incorporated into this Project shall be lead-free. .

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Project Closeout."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
7. A named product and model number establishes the characteristics and salient features of the specifications even when they are not fully described and will serve as the basis of comparison.
8. Whenever a material, article, device, piece of equipment or type of construction is identified by reference to manufacturers' or vendors' names, trade names, catalog numbers, or similar specific information, it is so identified for the purpose of establishing a standard of quality, and such identification shall not be construed as limiting competition. Comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product

B. Product Selection Procedures:

1. Named Product: Where Specifications name a single manufacturer and product, and “no substitutions” is indicated, provide the named product. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Named Manufacturer/Source: Where Specifications name a single manufacturer or source and “no substitutions” is indicated, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with

requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Evidence that the proposed product provides sustainable design characteristics that specified product provides for achieving LEED prerequisites and credits.
3. Evidence that the proposed product will not adversely affect Contractor's construction schedule.
4. Evidence that the proposed product has received necessary approvals of authorities having jurisdiction.
5. Evidence that the proposed product will have no adverse effect on other trades and will not affect or delay progress schedule; or if proposed product involves more than one contractor, proposed product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
6. Evidence that the proposed product maintenance service and source of replacement parts, as applicable, is available similar to the specified product.
7. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
8. Evidence that proposed product provides specified warranty.
9. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

10. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Installation of the Work.
2. Progress cleaning.
3. Starting and adjusting.
4. Protection of installed construction.
5. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017329 "Cutting and Patching" for cutting and patching portions of the building.
4. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 QUALITY ASSURANCE

A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services:

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and/or Owner as required, that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces without ceilings.

B. Mechanical Installations: Comply with the following requirements:

1. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
2. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
3. Install all equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.

C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

F. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

H. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

J. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site, public pedestrian paths and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
   a. Use containers intended for holding waste materials of type to be stored.
4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017329 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes procedural requirements for cutting and patching.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 024119 “Selective Structure Removal and Demolition” for demolition of selected portions of the site for alterations.
3. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

C. Coordinate cutting and patching requirements with selective demolition. Removal of portions of existing construction required for the installation or performance of other work may be indicted as selective demolition on the demolition drawings. Cut and patch all construction when not shown on the demolition drawings, or when additional cutting and patching is required after the completion of selective demolition.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.3 INFORMATIONAL SUBMITTALS

A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

1.4 QUALITY ASSURANCE

A. Minimize cutting and patching of work by properly coordinating construction sequences with Construction Manager.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Fire separation assemblies.
c. Air or smoke barriers.
d. Fire-suppression systems.
e. Mechanical systems piping and ducts.
f. Control systems.
g. Communication systems.
h. Fire-detection and -alarm systems.
i. Conveying systems.
j. Electrical wiring systems.
k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Exterior curtain-wall construction.
d. Sprayed fire-resistive material.
e. Equipment supports.
f. Piping, ductwork, vessels, and equipment.
g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

1. Cutting and Patching of Existing Roofing System: Contractors performing cutting and patching of the existing roof membrane shall be certified installers by the existing roof membrane manufacturer for their products. When existing roofing system is still under warranty, coordinate all work on the existing roofing system

with manufacturer. All cutting and patching work on roofing system shall be performed in a manner that does not void the warranty.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 1000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 15 days of date established for commencement of the Work.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

1.6 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, and waste reduction work plan. Distinguish between demolition and construction waste.

B. Waste Identification: Indicate anticipated types of demolition and construction waste generated by the Work.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1. Construction Waste:

a. Packaging: Salvage or recycle 100 percent of the following uncontaminated packaging materials:

1) Paper.
2) Cardboard.
3) Boxes.
4) Plastic sheet and film.
5) Polystyrene packaging.
6) Wood crates.
7) Wood pallets.
8) Plastic pails.

b. Construction Office Waste: Salvage or recycle 100 percent of the following construction office waste materials:

1) Paper.
2) Aluminum cans.
3) Glass containers.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
2. Review waste management procedures with all entities when they first begin work on-site, including locations established for salvage, recycling, and disposal.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
2. Section 017300 "Execution" for progress cleaning of Project site.
3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
4. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
5. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

1.2 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.

5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
7. Submit fully executed Certification of Drawings and Specification Compliance form included at the end of this Section.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."

6. Advise Owner of changeover in heat and other utilities.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Architect will perform inspection in areas no smaller than a floor plate. Inspection of individual rooms or spaces will not be performed.
2. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   a. Reinspection Limits: The Architect and Construction Manager are limited to performing the original inspection and one reinspection of the same area as part of their services. The cost of any reinspections required beyond this amount will be borne by the Contractor. Contractor shall reimburse Owner for reinspection fees paid to the Architect and/or Construction Manager through a credit change order in the amount stipulated by the Owner
3. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect

will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
    a. Reinspection Limits: The Architect and Construction Manager are limited to performing the original inspection and one reinspection of the same area as part of their services. The cost of any reinspections required beyond this amount will be borne by the Contractor. Contractor shall reimburse Owner for reinspection fees paid to the Architect and/or Construction Manager through a credit change order in the amount stipulated by the Owner

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in the following format:

    a. MS Excel electronic file. Architect will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.

p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
q. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

Attachment: Certification of Drawing and Specification Compliance form

CERTIFICATION OF DRAWING AND SPECIFICATION COMPLIANCE

The Undersigned Prime Contractor does herein certify that:

1. All materials furnished for this project do fully comply with all specification requirements as stated within the Contract Documents;

2. That no asbestos containing materials of any nature are used in the work;

3. That execution of the Work covered by this certification has been performed in accordance with the Contract Document drawings.

CONTRACT NUMBER AND CONTRACT NAME: _____

NAME OF CONTRACTOR: _____

CERTIFICATION BY: _____ TITLE: _____

ADDRESS: _____

DATED: _____

CORPORATE ACKNOWLEDGEMENT

)SS.
)

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ that he is the officer of the said corporation executing the foregoing instrument, that he knows the seal of said corporation, that the seal affixed to said instrument is such corporate seal, that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

_____
Notary Public

INDIVIDUAL ACKNOWLEDGEMENT

State of

)SS.
)

County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at

_____ that he is the individual who executed the foregoing instrument.

_____
Notary Public

PARTNERSHIP ACKNOWLEDGEMENT

State of
)SS.
)
County of

On the _____ day of _____, before me came _____ to me known and who by me being duly sworn did depose and say that he resides at _____ that he is the partner in the firm of _____ doing business under the name of _____ and that he executed the foregoing instrument on behalf of said partnership.

_____
Notary Public

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Product maintenance manuals.
5. Systems and equipment maintenance manuals.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file complete with Table of Contents and book marked by equipment. Submit on digital media acceptable to Architect.

a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
b. Enable inserted reviewer comments on draft submittals.

2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.

C. Initial Manual Submittal: Submit draft copy of each manual at least 60 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 30 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of

equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Name and contact information for Commissioning Authority.
8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.

7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.

3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."

G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous Record Submittals.

B. Related Requirements:

1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.
3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Submit PDF electronic files of scanned record prints and one set of prints.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record ("As- Built") Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations below first floor.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Field Order.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

7. Format: Submit PDF electronic files of scanned record prints and one set of prints.

    a. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
    b. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
    c. Identification: As follows:
        1) Project name.
        2) Date.
        3) Designation "PROJECT RECORD DRAWINGS."
        4) Name of Architect
        5) Name of Contractor.

B. Record Digital Data Files: In addition to submitting paper Record Drawings, transfer information to electronic CAD drawings in .DXF format and prepare set of digital record drawings. Architect will supply a set of base electronic drawings for Contractor's use. Submit electronic Record Drawings to Owner in same manner as paper Record Drawings.

C. The following certification shall appear on all Record Drawings: "These record drawings prepared by _____for the following work _____ have been reviewed by the undersigned and appear to be an accurate representation of the work incorporated within the project and are accepted as submitted in accordance with the technical documents. This record document review made by this office is for determination of compliance with the requirements of the contract documents.
Firm Name: _____ Date: _____ Reviewer Name: _____ _I

D. If the Construction Manager or Architect determines the Record Drawings are not complete or contain inaccurate information, they will return the documents to the Contractor for correction and resubmission.

E. Final payment will not be made to Contractor until complete and accurate Record Drawings both on paper and electronic media have been received and accepted by Owner.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file or scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and Construction Manager’s reference during normal working hours.

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Contractor.
e. Date of video recording.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

B. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor has delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.

e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project record documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Provide operating and maintenance instruction to Owner's personnel for systems and components as indicated in individual Specification Sections. Provide instruction periods, comprised of approximately 50 percent classroom instruction and 50 percent "hands-on" instruction.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids.

B. Video: Provide minimum 640 x 480 video resolution converted to .mp4 format file type, on electronic media.

1. Electronic Media: CD ROM or thumb drive, with computer made label.
2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. E-mail address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.
2. Produce segments to present a single significant piece of equipment per segment.
3. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
4. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording. Furnish additional portable lighting as required.

E. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 017900

TECHNICAL SPECIFICATION 02081

ASBESTOS ABATEMENT PROJECT AT:

SIWANOY ELEMENTARY SCHOOL
ADDITIONS AND ALTERNATIONS
489 SIWANOY PLACE
PELHAM, NY 10803

Prepared for:

Pelham Public Schools
629 Fifth Avenue
Pelham, NY 10803

Prepared by:

WSP USA, Inc.
One Penn Plaza, 4th Floor
New York, NY 10119

November 12, 2026
Project No. US0048608.1475
Frank Urilov, P.E.
NYS Project Designer
25-6HQ11-SHAB

TABLE OF CONTENTS

PART 1 – GENERAL **1**
1.01 DESCRIPTION OF WORK **1**
1.02 PHASING OF WORK **16**
1.03 AUTHORITY TO STOP WORK **16**
1.04 SITE REQUIREMENTS **16**
1.05 HEALTH AND SAFETY **17**
1.06 WORK SUPERVISION AND COORDINATION **18**
1.07 SUBMITTALS **19**
1.08 FIRE PROTECTION AND EMERGENCY EGRESS **22**
1.09 CLEAN-UP **23**
1.10 CODES, PERMITS, AND STANDARDS **23**
1.11 TERMINOLOGY **24**
1.12 REQUIREMENTS AND QUALIFICATIONS **28**
1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES **30**

PART 2 - PRODUCTS **32**
2.01 MATERIALS **32**
2.02 EQUIPMENT **36**
2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT **38**

PART 3 - EXECUTION **40**
3.01 DECONTAMINATION ENCLOSURE SYSTEMS **40**
3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES **46**
3.03 PREPARATION OF WORK AREA **51**
3.04 PRE-REMOVAL INSPECTIONS **58**
3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS **60**
3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL. **61**
3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES **66**
3.08 CLEANUP AND CLEARANCE TESTING OF WORK AREAS. **67**
3.09 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE **67**

SECTION 02081

ASBESTOS ABATEMENT

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The Asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. Asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work. The Asbestos Contractor shall provide all plant, labor, equipment and materials complete for performance of the Work in accordance with the Contract Documents. All asbestos material is to be disposed of as ACM waste. Quantities indicted below are confirmed asbestos.

SIWANOY ELEMENTARY SCHOOL
489 Siwanoy Place, Pelham, NY 10803

1. Drawings H002.00 and H006.00: Ground Floor

a. Remove and dispose of asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat); contaminated ceramic wall tile backing, gray, ceramic wall tile grout, white and ceramic wall tile; ceiling cement coating, gray; floor tile mastic associated with 9”x9” green floor tile, black; 9”x9” floor tile, green and contaminated 12”x12” floor tile, blue and associated mastic, black and laminate floor & associated adhesive; concealed pipe insulation & associated fittings in wall chase concealed waterproofing under bathroom floor; glue dots associated with 1’x 1’ white pinhole ceiling tile, brown; concealed felt paper under wood floor; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 1.** Asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat); contaminated ceramic wall tile backing, gray, ceramic wall tile grout, white and ceramic wall tile; ceiling cement coating, gray; concealed pipe insulation & associated fittings in wall chase concealed waterproofing under bathroom floor; glue dots associated with 1’x 1’ white pinhole ceiling tile, brown; and concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing floor tile mastic associated with 9”x9” green floor tile, black; 9”x9” floor tile, green and contaminated

12”x12” floor tile, blue and associated mastic, black and laminate floor & associated adhesive shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.7 Non-friable Flooring and/or Mastic Removal. Asbestos-containing exterior door/window/louver caulking, gray/white; concealed door/window/ louver caulking/tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

b. Remove and dispose of assumed asbestos-containing concealed vapor diffusion retarder under slab / soft concrete filler; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 2.** Assumed asbestos-containing concealed vapor diffusion retarder under slab / soft concrete filler shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Tent Removal Procedure. Asbestos-containing exterior door/window/louver caulking, gray/white; concealed door/window/louver caulking/tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Area B Ground Floor, Corridor, Vestibule & Stairwells	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	1,104 SF	YS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	520 SF	
		Concealed Vapor Diffusion Retarder Under Slab / Soft Concrete Filler	154 SF	
	Area B Ground Floor Teachers’ Lounge 015	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	324 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	185 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Area B Ground Floor All Gender Bathroom 013	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	94 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	24 SF	
		Contaminated Ceramic Wall Tile, Ceramic Wall Tile Backing, Gray and Ceramic Wall Tile Grout, White	16 SF	
	Area B Ground Floor Storage 010, Adjacent Closet 010A, Psychology Office 011 & 011A	Ceiling Cement Coating, Gray and Contaminated Wooden Shiplap	678 SF	
	Area B Ground Floor Music Room 009 & Adjacent Storage 009A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	725 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	300 SF	
	Area B Ground Floor Occupational Therapy 008	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	120 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	490 SF	
		Floor tile Mastic Associated with 9”x9” Green Floor Tile, Black; 9”x9” Floor Tile, Green and Contaminated 12”x12” Floor Tile, Blue and Associated Mastic, Black	110 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
	Area B Ground Floor All Gender Bathroom 007A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	96 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	550 SF	
		Contaminated Ceramic Wall Tile, Ceramic Wall Tile Backing, Gray and Ceramic Wall Tile Grout, White	300 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	25 LF	
		Concealed Waterproofing under Bathroom Floor – Assumed ACM	96 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Area B Ground Floor Resource Room 007	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	282 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	360 SF	
		Glue Dots associated with 1'x 1' White Pinhole Ceiling Tile, Brown	40 SF	
		Floor tile Mastic Associated with 9"x9" Green Floor Tile, Black; 9"x9" Floor Tile, Green (Bottom Layer) and Contaminated 12"x12" Floor Tile, Blue and Associated Mastic, Black (Middle Layer) and Laminate Floor & Associated Adhesive (Top Layer)	282 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
	Area B Ground Floor Classroom 014 (Kindergarten) & Adjacent Closet	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	763 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	165 SF	
		Floor tile Mastic Associated with 9"x9" Green Floor Tile, Black; 9"x9" Floor Tile, Green	80 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
	Area B Ground Floor Custodial Office 012	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	250 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	48 SF	
	Area B Ground Floor Nurse's Office 001	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	233 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	100 SF	
		Floor tile Mastic Associated with 9"x9" Green Floor Tile, Black; 9"x9" Floor Tile, Green (Bottom Layer) and Contaminated 12"x12" Floor Tile, Blue and Associated Mastic, Black (Top Layer)	233 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Area B Classroom 002 (Kindergarten) with Adjacent Bathroom, Vestibule & Closet 002A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	755 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	1,470 SF	
		Contaminated Ceramic Wall Tile, Ceramic Wall Tile Backing, Gray and Ceramic Wall Tile Grout, White	120 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	6 LF	
		Concealed Waterproofing under Bathroom Floor – Assumed ACM	70 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	70 SF	
		Floor tile Mastic Associated with 9”x9” Green Floor Tile, Black; 9”x9” Floor Tile, Green (Bottom Layer) and Contaminated 12”x12” Floor Tile, Blue and Associated Mastic, Black (Top Layer)	190 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
2	Area C Ground Floor Boiler Room 005A & Adjacent Vestibule	Concealed Vapor Diffusion Retarder under Slab / Soft Concrete Filler – Assumed ACM	100 SF	NYS DOL 12 NYCRR PART 56 §7.11 TENT REMOVAL PROCEDURE
	Area C Ground Floor Carpentry Shop 005	Concealed Vapor Diffusion Retarder under Slab / Soft Concrete Filler – Assumed ACM	32 SF	
1 & 2	Areas A, B, C Ground Floor, Exterior Throughout	Exterior Door/Window/Louver Caulking, Gray/White	205 SF	NYS DOL 12 NYCRR PART 56 §11.6 EXTERIOR PROJECT REMOVAL OF NON-FRIABLE ACM
		Concealed Door/Window/Louver Frame, Caulking/Tar – Assumed ACM	315 SF	
		Concealed Waterproofing Barrier behind Face Brick – Assumed ACM	730 SF	

2. Drawings H003.00 and H007.00: First Floor Plan

a. Remove and dispose of asbestos-containing floor tile mastic Associated with 9”x9” yellow floor tile, black; 9”x9” floor tile, yellow; contaminated 12”x12” floor rile, white marble & blue and associated mastic, gray; plywood subflooring; contaminated 12”x12” floor tile, red speckled & associated mastic/glue, gray; concealed pipe insulation & associated fittings in wall chase; concealed felt paper under wood floor; ceramic wall Tile backing, gray; contaminated ceramic Wall tile; ceramic wall tile grout, white; concealed waterproofing under bathroom floor; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 3.** Asbestos-containing mastic

Associated with 9”x9” yellow floor tile, black; 9”x9” floor tile, yellow; contaminated 12”x12” floor rile, white marble & blue and associated mastic, gray; plywood subflooring; contaminated 12”x12” floor tile, red speckled & associated mastic/glue, gray shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.7 Non-friable Flooring and/or Mastic Removal. Asbestos-containing concealed pipe insulation & associated fittings in wall chase; concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Tent Removal Procedure. Asbestos-containing ceramic wall Tile backing, gray; contaminated ceramic Wall tile; ceramic wall tile grout, white and concealed waterproofing under bathroom floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing exterior door/window/louver caulking, gray/white; concealed door/window/ louver caulking/tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

b. Remove and dispose of asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat); concealed pipe insulation & associated fittings in wall chase; concealed felt paper under wood floor; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 4.** Asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat); concealed pipe insulation & associated fittings in wall chase; and concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

c. Remove and dispose of asbestos-containing concealed pipe insulation & associated fittings in wall chase; concealed corrugated radiator insulation, white/gray; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 5.** Asbestos-

containing concealed pipe insulation & associated fittings in wall chase and concealed corrugated radiator insulation, white/gray shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing exterior door/window/louver caulking, gray/white; concealed door/window/louver caulking/tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
3	Area A 1st Floor Corridor & Vestibule	Floor tile Mastic Associated with 9"x9" Yellow Floor Tile, Black; 9"x9" Floor Tile, Yellow (Bottom Layer), Contaminated 12"x12" Floor Tile, White Marble & Blue and Associated Mastic, Gray (Top Layer) and Plywood Subflooring	16 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
	Area A 1st Floor Library & Adjacent Closet 109B	Floor tile Mastic Associated with 9"x9" Yellow Floor Tile, Black; 9"x9" Floor Tile, Yellow (Bottom Layer), Contaminated 12"x12" Floor Tile, White Marble & Associated Glue, Gray (Top Layer) and Plywood Subflooring	210 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
3	Area A 1st Floor Bathroom 109A	Floor tile Mastic Associated with 9"x9" Yellow Floor Tile, Black; 9"x9" Floor Tile, Yellow, Contaminated 12"x12" Floor Tile, Red Speckled & Associated Mastic/Glue, Gray	70 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
	Area A 1st Floor Bathroom 109A	Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	20 LF	NYS DOL 12 NYCRR PART 56 §7.11 TENT REMOVAL PROCEDURE
	Area A 1st Floor Special Ed 108 & Adjacent Closet 108A	Concealed Felt Paper under Wood Floor – Assumed ACM	30 SF	
	Area A 1st Floor Boys' Bathroom 107	Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	60 LF	
		Ceramic Wall Tile Backing, Gray and Contaminated Ceramic Wall Tile and Ceramic Wall Tile Grout, White	320 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Concealed Waterproofing under Bathroom Floor – Assumed ACM	190 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
4	Area B 1st Floor Corridor, Vestibule & Stairwells	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	1,260 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	480 SF	
	Area B 1st Floor Classroom 104 with Adjacent Vestibule & Closet 104A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	870 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	1,700 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	250 SF	
	Area B 1s t Floor Classroom 103 & Adjacent Closet 103A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	767 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	1,050 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	30 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	170 SF	
	Area B 1st Floor Classroom 102 & Adjacent Closet 102A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	799 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	1,350 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	215 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
4	Area B 1st Floor Classroom 105 & Adjacent Vestibule	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	822 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	102 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	60 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	95 SF	
	Area B 1st Floor Secretary 106 & Principal's Office 106A with Adjacent Closet 106C	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	350 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	60 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	6 SF	
	Area B 1st Floor Security & Intervention	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	255 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	56 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	10 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	8 SF	
	Area B 1st Floor Classroom 101 with Adjacent Vestibule & Closet 101A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	823 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	50 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	45 SF	
5	Area C 1st Floor Gym/Cafe/Auditorium with Adjacent Kitchen & Storage (Originally Served as Gym)	Concealed Pipe Insulation & associated Fittings in Wall Chase	5 LF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Concealed Corrugated Radiator Insulation, White/Gray	600 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
3, 4 & 5	Areas A, B, C 1st Floor, Exterior Throughout	Exterior Door/Window/Louver Caulking, Gray/White	350 SF	NYS DOL 12 NYCRR PART 56 §11.6 EXTERIOR PROJECT REMOVAL OF NON-FRIABLE ACM
		Concealed Door/Window/Louver Frame, Caulking/Tar	595 SF	
		Concealed Waterproofing Barrier behind Face Brick	1,300 SF	

3. Drawing H004.00 and H008.00: Second Floor Plan

a. Remove and dispose of asbestos-containing floor tile mastic associated with 9”x9” yellow floor tile, black; 9”x9” floor tile, yellow; contaminated 12”x12” floor tile, White marble / blue & associated glue, gray; plywood subflooring; concealed felt paper under wood floor; concealed pipe insulation & associated fittings in wall chase; concealed felt paper under wood floor; ceramic wall tile backing, gray; contaminated ceramic wall tile; wall tile grout, white; concealed waterproofing under bathroom floor; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 6.** Asbestos-containing floor tile mastic associated with 9”x9” yellow floor tile, black; 9”x9” floor tile, yellow; contaminated 12”x12” floor tile, White marble / blue & associated glue, gray; plywood subflooring and concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.7 Non-friable Flooring and/or Mastic Removal. Asbestos-containing concealed pipe insulation & associated fittings in wall chase and concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Tent Removal Procedure. Asbestos-containing ceramic wall tile backing, gray; contaminated ceramic wall tile; wall tile grout, white and concealed waterproofing under bathroom floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

b. Remove and dispose of asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat); concealed felt paper under

wood floor; exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 7**. Asbestos-containing ceiling plaster (brown coat) and contaminated ceiling plaster (white coat); wall plaster (brown coat) and contaminated wall plaster (white coat) and concealed felt paper under wood floor shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Full Containment Procedure with 56 §8.6 Multiple Abatement within Single Work Area. Asbestos-containing exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

c. Remove and dispose of asbestos-containing exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick within **Work Area 8**. Asbestos-containing exterior door/window / louver caulking, gray/white; concealed door/window/ louver caulking/ tar and concealed waterproofing barrier behind face brick shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB AC

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
6	Area A 2nd Floor Corridor & Vestibule	Floor tile Mastic Associated with 9”x9” Yellow Floor Tile, Black; 9”x9” Floor Tile, Yellow (Bottom Layer), Contaminated 12”x12” Floor Tile, White Marble / Blue & Associated Glue, Gray (Top Layer) and Plywood Subflooring	14 SF	NYS DOL 12 NYCRR PART 56 §11.7 NON-FRIABLE FLOORING AND/OR MASTIC REMOVAL
		Concealed Felt Paper under Wood Floor – Assumed ACM	106 SF	
		Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	NYS DOL 12 NYCRR PART 56 §7.11 TENT REMOVAL PROCEDURE
	Area A 2nd Floor Classroom 210 & Adjacent Closet 210A	Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	80 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
6	Area A 2nd Floor Girls' Bathroom 209	Concealed Pipe Insulation & associated Fittings in Wall Chase – Assumed ACM	40 LF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Ceramic Wall Tile Backing, Gray, Contaminated Ceramic Wall Tile and Wall Tile Grout, White	450 SF	
		Concealed Waterproofing under Bathroom Floor – Assumed ACM	220 SF	
7	Area B 2nd Floor Corridor & Stairwells	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	870 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	196 SF	
	Area B 2nd Floor Classroom 206 with Adjacent Closets 206A & 206C	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	869 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	260 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	85 SF	
	Area B 2nd Floor Classroom 205 & Adjacent Closet 205A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	820 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	70 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	95 SF	
	Area B 2nd Floor Classroom 203 with Adjacent Closets 203A & 203B	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	869 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	220 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	125 SF	
	Area B 2nd Floor Classroom 207 & Adjacent Closet 207A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	869 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	285 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	110 SF	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
7	Area B 2nd Floor Speech 208B	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	95 SF	NYS DOL 12 NYCRR PART 56 § 7.11 FULL CONTAINMENT PROCEDURES WITH 56 § 8.6 MULTIPLE ABATEMENT WITHIN SINGLE WORK AREA
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	200 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	95 SF	
	Area B 2nd Floor Multi-Purpose Room 200 & Adjacent Closet 200A	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	1,020 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	200 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	40 SF	
	Area B 2nd Floor Classroom 202	Ceiling Plaster (Brown Coat), Contaminated Ceiling Plaster (White Coat) & Wooden Shiplap	692 SF	
		Wall Plaster (Brown Coat), Contaminated Wall Plaster (White Coat) & Wooden Shiplap	250 SF	
		Concealed Felt Paper under Wood Floor – Assumed ACM	65 SF	
6, 7 & 8	Areas A, B, C 2nd Floor, Exterior Throughout	Exterior Door/Window/Louver Caulking, Gray/White	473 SF	NYS DOL 12 NYCRR PART 56 §11.6 EXTERIOR PROJECT REMOVAL OF NON-FRIABLE ACM
		Concealed Door/Window/Louver Frame, Caulking/Tar	795 SF	
		Concealed Waterproofing Barrier behind Face Brick	1,685 SF	

***ACM ceiling plaster on the 2nd floor, area "B" extends to the Attic above. Attic contains debris from the ceiling plaster brown coat between wood joists. Contractor shall clean the Attic, following all safety procedures.**

4. Drawing H005.00: Site Plan

a. Remove and dispose of asbestos-containing concealed underground pipe within **Work Area 9.** Asbestos-containing concealed underground pipe shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Tent Procedures. Asbestos-containing slate tiles / felt paper / transition tar shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
9	Exterior Playground	Concealed Underground Pipe	435 SF	NYS DOL 12 NYCRR PART 56 §11.6 EXTERIOR PROJECT REMOVAL OF NON-FRIABLE ACM

5. Drawing H009.00: Attic and Roof Plan

a. Remove and dispose of assumed asbestos-containing roofing system materials; flashing/tar associated with roofing system; roof asphalt Shingle; concealed felt paper under roof asphalt shingle, roof flashing/tar and roof drip edge flashing/tar within **Work Area 10.** Assumed asbestos-containing roofing system materials; flashing/tar associated with roofing system; roof asphalt Shingle; concealed felt paper under roof asphalt shingle, roof flashing/tar and roof drip edge flashing/tar shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7.11 Tent Procedures. Asbestos-containing slate tiles / felt paper / transition tar shall be removed utilizing NYS DOL 12 NYCRR Part 56 §11.6 Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
10	Area B Sloped EPDM Roof	Roofing System Materials – Assumed ACM	22 SF	NYS DOL 12 NYCRR PART 56 §11.6 EXTERIOR PROJECT REMOVAL OF NON-FRIABLE ACM
		Flashing/Tar associated with Roofing System – Assumed ACM	8 SF	
	Area B Sloped Asphalt Shingle Roof	Roof Asphalt Shingle – Assumed ACM	120 SF	
		Concealed Felt Paper under Roof Asphalt Shingle – Assumed ACM	120 SF	
		Roof Flashing/Tar – Assumed ACM	10 SF	
		Roof Drip Edge Flashing/Tar – Assumed ACM	10 SF	
	Area C Sloped Asphalt Shingle Roof	Roof Asphalt Shingle – Assumed ACM	10 SF	
		Concealed Felt Paper under Roof Asphalt Shingle – Assumed ACM	10 SF	
		Roof Flashing/Tar – Assumed ACM	25 SF	
		Roof Drip Edge Flashing/Tar – Assumed ACM	10 SF	

B. The Contractor is responsible for completing all notifications and variances required to meet the determined start date (if applicable).

C. If asbestos containments are required, the Contractor shall establish the asbestos containments so as to not interfere with operation of or access to the temporary equipment that shall be installed by others.

D. The Contractor shall field verify the amount of ACM and familiarize him/her-self with all variable field conditions in the building before the submission of his/her quote. The quantities presented in this specification are approximate only and should not be used solely as the basis for any quote. Any discrepancies or difference in the approximate and actual quantities shall be resolved before the award of any Contract. No change order relative to ACM material quantity will be permitted after the award of the Contract. In the event that suspect materials not included in this Specification are encountered while the work is in progress, such material shall be tested and, if confirmed ACM, removed as ACM, in accordance with the procedures contained herein. The discovery of any new material(s) should not delay the progress of the work as contained in this specification. Payment for any additional work will be considered on a case-by-case basis by the Environmental Consultant and Pelham Public Schools. It is the responsibility of the Contractor to determine and negotiate the full cost of any such payment prior to performance of any additional work.

E. ACM shall be properly handled, packaged, and transported for disposal in a landfill in accordance with all Federal, State and Local regulations. After September 4, 2006, the Contractor shall follow Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56) as amended effective March 21, 2007. All related manifests and shipping logs shall be provided to Pelham Public Schools upon or before the end of the project.

F. All work shall be accomplished in strict adherence to the project Specification, applicable Federal, State, and Local Regulations. Whenever there is a conflict or overlap of the above references, the more stringent provision shall apply.

G. The Contractor's industrial hygiene practices during asbestos abatement will be monitored by Pelham Public Schools' Environmental Consultant. The Contractor shall be responsible for monitoring his/her own construction safety work practices for compliance with the OSHA regulations.

H. The Asbestos Contractor shall provide the best available technology, and state-of-the-art procedures and methods of execution, clean-up, disposal, and safety.

I. The Contractor will be required, if approved by Pelham Public Schools and/or its Representative, to obtain at his/her own expense appropriate variances from regulatory agencies as required to complete the safe removal of asbestos containing material as described in this specification.

J. Pelham Public Schools' environmental consultant will sample all suspect materials that may be identified during the course of demolition, if applicable. The Contractor shall provide access to the consultant to perform the testing and no additional costs will be paid for the time it takes to perform the testing. The contractor shall provide itemized cost proposal to Pelham Public Schools which must include separate costs for the abatement of the individual materials revealed to be ACM (if applicable). Additional asbestos-containing materials shall not be abated without written authorization from Pelham Public Schools or environmental consultant. The contractor will not be compensated for any additional materials that can be encountered during the abatement project, without prior written authorization from Pelham Public Schools or environmental consultant.

1.02 **PHASING OF WORK**: This work shall include asbestos abatement associated with upcoming interior, exterior and roof upgrades project. The Asbestos Contractor shall perform and complete the abatement of asbestos-containing materials during regular working hours, Monday through Friday between 8:00 am and 4:00 pm or as directed by the facility. It is the Contractor's responsibility to ensure that acceptable visual inspection and air monitoring results are obtained with fiber count of <70 Structures/mm2 of air using AHERA analysis method and are completed prior to the return of building occupants or other trades. All work shall be coordinated with Pelham Public Schools and Pelham Public Schools' Environmental Consultant prior to start of any work. The Pelham Public Schools' Environmental Consultant shall be present whenever any asbestos abatement work is being conducted.

1.03 **AUTHORITY TO STOP WORK**: Pelham Public Schools and the Environmental Consultant shall have the authority to stop the abatement work at any time the contractor's work is not in conformance with the Specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of Pelham Public Schools and the Environmental Consultant. Standby time to resolve the problems shall be at the contractor's expense.

1.04 **SITE REQUIREMENTS:**

A. Noise Control: Provide mufflers or other acceptable means of noise reduction for all equipment to be used by the Contractor. Observe local laws regarding noise control.

B. Wastewater: All water used by the Contractor during asbestos abatement activities shall be collected and passed through a water filtration system capable of filtering particles down to 5 microns prior to being discharged into the sanitary sewer. The Contractor shall contact the Westchester County engineering department to determine the acceptable location(s) to access the sanitary sewer. The Contractor shall be responsible for connection to the sanitary sewer, and for providing piping, pumps, water filtration systems, and other items necessary to collect, transport, filter, and dispose of the wastewater.

C. Log In/Out: The Asbestos Contractor must ensure all workers log in and out daily at the site.

D. The location of the Decontamination Unit shall be as per abatement design drawings. All variations must be coordinated and approved by the site manager and Pelham Public Schools' Environmental Consultant.

1.05 HEALTH AND SAFETY:

A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the air supplied to respirators, or from toxic or damaging vapors or residues resulting from the use of encapsulant and/or wetting agents or other substances used by the Contractor during construction.

B. Chemical/Biological Hazards: The known chemical/biological hazards on site include asbestos-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.

C. Physical Hazards: The Contractor shall provide safety equipment and training to his/her workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.

D. Safety Act: The Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, material-men, and subcontractors, and visitors to the project site.

E. Accident Prevention: In order to protect the lives and health of his/her employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Pelham Public Schools and/or its Representatives, and a copy of the Contractor's report to his/her insurer of an accident must be provided to the Pelham Public Schools and/or its Representatives.

F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his/her work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.

G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.

H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Pelham Public Schools and/or its Representatives, is hereby permitted to act at his/her discretion.

I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages must add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.06 WORK SUPERVISION AND COORDINATION:

A. Abatement Contractor's Supervisor: From the start of work through to the project completion the Contractor shall have on-site a responsible and competent supervisor who posses valid NYSDOL Supervisor certifications. As a minimum, the Asbestos Contractor's Supervisor shall meet the qualifications as required by Article 1.12, for a job supervisor. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.

B. Quality of Work: The Supervisor shall supervise, inspect and direct the Work competently and efficiently, devoting such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.07 SUBMITTALS: Unless otherwise noted the Contractor shall submit three (3) copies of each APPLICABLE submittal to the Pelham Public Schools' Environmental Consultant and its Representatives for review and/or approval. The Contractor shall provide the following:

A. Pre-Project Submittal:

1. Certificates of Insurance naming Pelham Public Schools as additional insured.

2. All required bonds. All bonds shall be underwritten by a United States based, preferably New York State, A or B rated bonding company.

3. List of Subcontractors.

4. Health and Safety Plan: Provide a written Health and Safety Plan addressing procedures for work place safety. As a minimum, the following topics shall be addressed in the plan:

a. Hazard Communication. Procedure on how physical and health hazards associated with the work are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.

b. Guidelines for assessment and prevention of heat stress.

c. Procedures for using ladders safely.

d. Electrical safety procedures.

e. Emergency Action Plan: The Contractor shall submit for review a written Emergency Action Plan. This Plan shall outline the contingency actions to be performed for emergencies including fire, accident, power failure, supplied air system failure, breach of work area containment, unexpected asbestos contamination in the site area and on the adjoining grounds, or spilling of asbestos material being hauled to storage and/or disposal. This Plan shall identify the manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of this Section). This Plan shall be readily available for review by all workers.

f. Fall Protection Plan: The Contractor shall submit for review a written Fall Protection Plan. This plan shall outline the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.

4. Proof of written notifications required by Paragraph "Codes, Permits and Standards" of this Section. Proof that all required permits and variances have been obtained.

5. Proof of written notification to the local police department, fire department and Facility (include a copy of required by NYS DOL ICR 56 section 56-3.6a ten day notice) that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and drawings indicating the areas to undergo abatement.

6. Documentation of compliance with all requirements of paragraph "Requirements and Qualifications" of this Section. Submittal shall include:

   a. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.

   b. Proof of a current medical surveillance program for all Contractor's personnel to work on this project.

   c. Completed and notarized Certificate of Worker's Release for each asbestos abatement worker, workers of other trades, or supervisory personnel who enter the work area or otherwise contact ACM.

7. Proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.

8. Proof of historic airborne fiber data. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1. date of measurement; 2. type of work task monitored; 3. methods used for sample collection and analysis, and; 4. number, duration and results of samples taken.

9. Proof that a landfill site has been located, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials have been made. Provide the name and location of the landfill, and waste transport company, if applicable.

10. Manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Safety Data Sheets (SDS) for encapsulant, fire retardant plastics, mastic remover and other chemicals to be used on this project.

11. A detailed Asbestos Removal and Disposal Work Plan which describes all aspects of the work to be performed for this project. The Plan shall include the following:

    a. A detailed description of the work area enclosure. Provide shop drawings (with dimensions and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; and 2) proposed layout and location of the decontamination enclosure systems. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.

    b. Specimen of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval to Pelham Public Schools no later than seven days prior to the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.

2. Notarized copy of payroll showing that prevailing wage rates have been paid shall be submitted to the Pelham Public Schools on a weekly basis. Contractor shall use DOL form for wage payment.

3. A "Request For Services" form shall be submitted at least 24 hours in advance of required air monitoring tests and inspections to be performed by the Pelham Public Schools' Environmental Consultant.

4. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers

to see. A copy of the results shall be given to the Pelham Public Schools' Environmental Consultant at the same time.

5. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator which acknowledge the Contractor's delivery(s) of material, shall be submitted to the Consultant and Engineer within thirty days following removal of ACM from building.

6. A copy of the bound log book.

C. Post Project Submittal:

1. A notarized "Release of Liens" in a form acceptable to the Pelham Public Schools. Use the standard AIA form. Such notarized release of all liens shall certify that all subcontractors, labor suppliers, etc., have been paid their pro rate share of all payments to date, that the contractor has no basis for further claim, and will not make further claim for payment in any account after the first payment is made to him.

2. Proof of payment of prevailing wage rate to direct employees and subcontractor.

3. Notarized copies of a daily log showing the date(s) and time(s) of entrance to and exit from the work area(s) for all persons.

4. Compilation in chronological order of all air monitoring records pertaining to this project.

5. Compilation of all completed and signed Waste Shipment Record forms, bills of lading, or disposal receipts pertaining to this project.

6. Copies of notifications and checks to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.

7. Contractor shall submit the following items as part of his final submittals: Paid invoice verifications for sub-contractor (for Time and Material job), service contract agreement, insurance certificates, copies of the workers licenses (NYSDOL), and other submittal required for the Specification.

1.08 FIRE PROTECTION AND EMERGENCY EGRESS: The Contractor shall be responsible to the security and safeguarding of all areas turned over by the facility to the Contractor. The Contractor shall designate to his/her workers and other building occupants a means of egress in case of emergency.

A. The Contractor shall establish emergency and fire exits from the work area. First aid kit, 2 full sets of protective clothing and respirators shall be provided for use by qualified emergency personnel in the clean room of the decontamination facility.

a. For full containment only, the Contractor shall provide a secure work area to protect against unauthorized entry into and around the work area. Any hazardous conditions shall be reported to the contractor's Supervisor and the contractor shall correct the hazard immediately. Any intrusion or incident shall be documented in a bound log book which shall be maintained at the project site.

1.09 CLEAN-UP:

A. Asbestos Related Clean-up: All clean-up work related to asbestos abatement work shall be in strict accordance with general technical requirements and this specification.

B. Final Site Cleaning: Upon completion of the work, the Contractor shall remove all temporary construction, decontamination facilities, and unused materials placed on site by the Contractor; put the premises in a neat and clean condition; and provide all sweeping, cleaning, and washing required to restore the site to its original condition.

1.10 CODES, PERMITS, AND STANDARDS:

A. The Contractor shall be solely responsible for compliance with all applicable federal, state (12 NYCRR Part 56 Adopted March 21, 2007), and local laws, ordinances, codes, rules, and regulations which govern asbestos abatement work or hauling and disposal of asbestos waste material. The current issue of each document shall govern. All work shall comply with all applicable codes and regulations as amended including: EPA Title 40CFR, Part 763, OSHA Title 29CFR, part 1910(including sections 1001,134,1926.2 and 1926.1200); EPA Title 40 CRF Part 61; NYSDEC Title 6,Part 364 and NYSDOH Title 10,Part 73

B. Before starting the work, the Contractor shall examine the Technical Specification for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to Pelham Public Schools' Environmental Consultant.

C. Where conflict among requirements or with these Specifications exists, the more stringent requirements shall apply.

D. Permits, State Licenses, and Notifications: The Contractor shall be responsible for obtaining necessary permits, variances, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses, permits, and notifications shall be paid by the Contractor. Contractor shall use all notification forms where applicable.

1. Agency Notification: At least 10 days prior to commencement of any asbestos removal, the Contractor shall prepare written notification to EPA Region 2, to the New York State Department of Labor (NYSDOL), and all other applicable agencies having jurisdiction. In addition, the Contractor shall be required to obtain any other permits for work covered under this specification including permits required for air sampling.

1.11 TERMINOLOGY: The following commonly-used terms are defined in the context of these Specifications:

A. Asbestos Project: Work that involves the removal, encapsulation, enclosure, repair or disturbance of friable or non-friable asbestos, or any handling of asbestos material that may result in the release of asbestos fibers. For the purpose of compliance with this Part, an asbestos project shall include any disturbance of asbestos fibers, and the planning, asbestos survey (as per Subpart 56-5.1), design, background air sampling, inspection, air sampling and oversight of abatement work, cleanup, and the handling of all asbestos material subject to abatement, as well as the supervising of such activities. Installation of friable ACM shall also be considered an asbestos project. An asbestos project starts with Phase I when the planning, asbestos survey, and design work begins or is required to begin.

B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.

C. Aggressive Air Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.

D. Air Filtration Device (AFD) - A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.

E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.

F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.

G. Amended Water: Water to which a surfactant has been added.

H. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.

I. Authorized Visitor: Pelham Public Schools' Environmental Consultant or representatives of any regulatory or other agency having jurisdiction over the project.

J. Pelham Public Schools' Environmental Consultant: Pelham Public Schools' agent who is authorized to exercise general contract administration and industrial hygiene inspection of the work.

K. Certified Industrial Hygienist (CIH): One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.

L. Class II asbestos work: Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Class I asbestos work includes the removal of thermal system or surfacing materials.

M. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101(b) and as outlined herein.

N. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

O. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).

P. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.

Q. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

R. Encapsulation: Application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.

S. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.

T. Excursion Limit (EL): The EL is an airborne concentration of asbestos to which no employee shall be exposed when not using respiratory protection. The EL is 1.0 f/cc as averaged over a 30 minute period.

U. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.

V. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.

W. Full Facepiece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.

X. Half Mask High Efficiency Respirator (HMHER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.

Y. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.

Z. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.

AA. Large Asbestos Project: Large asbestos project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 160 square feet or more of ACM, PACM or asbestos material or 260 linear feet or more of ACM, PACM or asbestos material.

AB. Lockdown: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.

AC. Minor Asbestos Project: Minor project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 10 square feet or less of ACM, PACM or asbestos material or 25 linear feet or less of ACM, PACM or asbestos material.

AD. Movable Object: A unit of equipment or furniture which can be removed from the work area.

AE. Plasticize: To cover floors and walls with plastic sheeting as herein specified.

AF. Permissible Exposure Limit (PEL): The PEL is an airborne concentration of ACM to which no employee shall be exposed when not using respiratory protection. The OSHA PEL is 0.1 f/cc expressed on an 8-hour time weighted average (TWA).

AG. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.

AH. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.

AI. Regulated Abatement Work Area: The portion of the restricted area where abatement work actually occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.

AJ. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.

AK. Small Asbestos Project: Small asbestos project shall mean an asbestos project involving the removal, disturbance, repair, encapsulation enclosure or handling of more than 10 and less than 160 square feet of ACM, PACM or asbestos material or more than 25 and less than 260 linear feet of ACM, PACM or asbestos material.

AL. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

AM Tent Procedure: A fire retardant polyethylene enclosure that includes walls, ceiling and a floor as required to remove ACM, PACM or asbestos material.

AN. Type C Respirator: A respirator which supplies air to the wearer from a source outside the work area by means of a compressor.

AO. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.

AP. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with an airlock entrance or a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.

1.12 REQUIREMENTS AND QUALIFICATIONS:

A. Minimum Experience: The Contractor shall have experience with abatement work, as evidenced through participation in at least ***two*** asbestos abatement projects of complexity comparable to this project.

B. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All personnel engaged in asbestos abatement or related activities shall have New York State DOL certifications. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Pelham Public Schools. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.

1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the NYSDOH-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as a NYSDOL-certified Contractor/Supervisor. Course must be provided by an NYSDOH-approved training provider. The supervisor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.

2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.

3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101(k)(3). Course must be provided by an NYSDOH-approved training provider.

4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the NYSDOL.

5. Prior to commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.

C. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.

1. The Contractor shall have a NYSDOL job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a qualified and certified supervisor, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. Pelham Public Schools' Designated Representative shall be informed of the substitution. The supervisor must be familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.

D. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n) (3).

E. Certificate of Worker's Release: Each asbestos abatement worker, workers of other trades, or any supervisory personnel who enter the work area, or otherwise contact ACM, shall submit a Certificate of Worker's Release, as required in the Section "Submittal".

1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES:

Visual inspections and air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations as defined in this specification.

A. Pelham Public Schools' Responsibilities:

1. Pelham Public Schools will employ an Environmental Consultant to perform Project Monitoring and air testing. The project monitor will have the authority to approve the contractor's work, stop the contractor's work and direct the contractor to take corrective actions where required.

2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift as required by the regulations.

3. Clearance testing by Transmission electron microscopy (TEM) will be conducted as per AHERA regulations. Air samples will be collected to demonstrate final re-occupancy clearance for work areas within the building. The fiber concentration must comply with the specified clearance level as per AHERA and this specification. Pelham Public Schools will provide for collection and analysis of one round of samples required to demonstrate clearance in each discrete work area.

4. Pelham Public Schools' Environmental Consultant will perform inspections of the work area, as specified, upon request of the Contractor.

B. Contractor's Responsibilities:

1. TEM air samples which fail to meet the re-occupancy clearance standard shall be paid for by the Contractor. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as TEM analysis, and the Environmental Consultant's time for additional cleaning and air testing,

shall be paid by the asbestos contractor. If results of the inside work area group of air samples are unsatisfactory, recleaning of regulated abatement work area surfaces using wet methods, followed by another drying time period and then collection and analysis of an additional set (both inside and outside work area samples) of clearance air samples is required. If only the results of the outside work area group of air samples is unsatisfactory, clean-up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods shall be performed prior to collection and analysis of an additional group of outside work area clearance air samples as required by ICR 56 Section 56-9.2. This recleaning/clean-up and sampling process shall be repeated until satisfactory clearance air sampling results have been achieved for all asbestos project non-exempt regulated abatement work areas throughout the entire work site.

2. The Contractor, at his/her expense, shall provide OSHA monitoring and all other all tests required by specified applicable regulations, codes, and standards and any other tests for his/her use. The use of a testing laboratory by Pelham Public Schools does not release the Contractor from providing tests required for the protection and safety of his/her employees.

3. The Contractor shall employ an independent testing laboratory for analysis of OSHA personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos." The monitoring shall be supervised by an Industrial Hygienist certified by the American Board of Industrial Hygiene (A.B.I.H.). Each testing laboratory shall be ELAP (Environmental Laboratory Accreditation Program) and NVLAP (National Voluntary Laboratory Accreditation Program) certified. Pelham Public Schools shall approve the contractor’s testing laboratory.

4. From each work area the Contractor, at his/her expense, shall collect and analyze OSHA personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101, Appendix A.

5. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Pelham Public Schools’ Environmental Consultant at the same time.

5. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his/her best efforts to resolve any such questions to the satisfaction of the Pelham Public Schools' Environmental Consultant.

6. Where air monitoring tests and/or inspections are specified, the Contractor shall notify Pelham Public Schools' Environmental Consultant, in writing, 24 hours, in advance of the required test and/or inspection.

8. The Contractor is responsible for ensuring the Work is complete to the level that meets the criteria of the inspection. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Pelham Public Schools' Environmental Consultant.

C. Time Requirements for Pelham Public Schools' Environmental Consultant's Inspections and Testing: Where visual inspections or air testing is required to be performed by the Pelham Public Schools' Environmental Consultant, the Contractor shall allow for the following response/analytical time for completion of the inspection/test.

1. Where visual inspections are required, allow 24 hours, beginning from the time the Contractor's request is received by the Pelham Public Schools' Environmental Consultant, for the performance of the inspection.

2. Where TEM clearance air monitoring tests are required, allow 24 hours, beginning from the time the Contractor's written request is received by the Pelham Public Schools' Environmental Consultant, to the beginning of the air test.

PART 2 - PRODUCTS

2.01 MATERIALS: Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

A. Plastic: Provide fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for plasticizing the enclosed work area, for preparation of the decontamination enclosure system, and for waste packaging.

B. Reinforced Fire Retardant Plastic: Provide reinforced polyethylene sheet for the floor area of the decontamination enclosure system. Reinforced plastic sheet provided for this project shall be a 19 mil, 3-ply, high density flame resistant-reinforced-polyethylene sheet. Plastic color shall be opaque.

C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water

D. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.

E. Lockdown Encapsulants: Encapsulants used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.

F. Caulking Sealant: Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufactures written instructions.

G. Foam Sealant: Foam Sealant shall be expanding urethane Class 1 foam sealant with an Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -30ºF and 250ºF.

H. Plywood: Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.

I. Spray Adhesive: Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).

J. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.

K. Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.

L. Shipping Containers: Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.

M. Markings and Labels: Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).

1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

2. DOT Marking and Labels: Markings and labels shall be permanently affixed to all bags and containers containing ACM, in accordance with DOT 49 CFR 172.304 and 172.407.

   a. Markings shall display the following text:

      RQ, ASBESTOS, NA 2212

   b. Labels shall be diamond shape and shall be located near the Marking text. Labels will consist of a diamond a minimum of 100 millimeters (mm) on each side with each side having a solid line inner boarder 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 172.446 for label format.

3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

   GENERATOR'S NAME
   GENERATOR'S 24 HOUR PHONE
   GENERATOR'S FACILITY ADDRESS

N. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

RESIDUE:
LAST CONTAINED ASBESTOS RQ

O. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

DANGER
ASBESTOS
MAY CUASE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

P. Mastic remover. The contractor shall use an odorless mastic remover. Manufacture and brand of mastic remover shall be approved by the Facility prior to commencing removal work.

2.02 EQUIPMENT: Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

A. Spraying Equipment: Equipment used to apply amended water or removal encapsulant shall be of a low pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.

B. Vehicles: Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.

C. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.

D. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room. Supply 2 additional extinguishers inside the work area

E. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector in the decontamination enclosure clean room, and one in the work area.

F. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.

G. Carts: Provide water tight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged asbestos waste from the decontamination enclosure system to the waste storage container or transport vehicle.

H. Power Tools: Provide power tools necessary to complete the Work. Power tools used directly for asbestos removal shall be equipped with a dust collection system. Attach a shroud connected to a HEPA vacuum system for capture of dust.

2.03 <u>WORKER PROTECTIVE CLOTHING AND EQUIPMENT</u>: Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101.

A. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.

1. The Contractor shall provide authorized visitors and the Pelham Public Schools' Environmental Consultant suitable properly fitting protective disposable clothing, headgear, hard hats, eye protection, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.

B. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.

C. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

Respirator Type	Protection Factor
Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Half-facepiece	10
Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Full-Facepiece	50 (quantitative)
Powered air purifying (PAPR): Positive pressure respirator High efficiency HEPA filter, Full-facepiece	1000
Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000
Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000
Type C supplied air: Pressure-demand, Full-facepiece equipped with an auxiliary SCBA	1000

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.

2. During the use of supplied air systems the Contractor shall provide authorized visitors, Pelham Public Schools' Environmental Consultant, and the testing laboratory representative with individually issued and marked respiratory equipment (up to six units). Respiratory equipment shall be compatible with the supplied air system in use, and shall be suitable for the

asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.

3. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

4. Breathing air supply systems shall conform to the USEPA NIOSH Document EPA-560-OPTS-86-001 (September 1986) entitled "A Guide to Respiratory Protection for the Asbestos Abatement Industry."

5. The Contractor shall have a minimum of two spare air hoses with connectors to permit the Pelham Public Schools' Environmental Consultant or testing laboratory's representative to connect his/her assigned Type C respirator to the air system at any time without having to wait for personnel to exit the work area in order to obtain a spare hose.

PART 3 - EXECUTION

3.01 DECONTAMINATION ENCLOSURE SYSTEMS:

A. Personal decontamination system enclosures shall be constructed and functional prior to commencing the regulated abatement work area preparation activities. Waste decontamination system enclosures shall be constructed and functional at the completion of preparation activities. After installation of the personal decontamination system enclosure, all access to the regulated abatement work area shall be via the installed personal decontamination system enclosure.

B. Personal Decontamination System Enclosure - Large Project.

(1) Enclosure – General. A personal decontamination system enclosure shall be provided outside the regulated abatement work area and in close proximity to all locations where personnel shall enter or exit the regulated abatement work area. One personal decontamination enclosure system for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The personal decontamination system enclosure shall be sized to accommodate the number of workers and equipment required for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, personal decontamination enclosure systems may be constructed of metal, wood or plastic supports

covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance with all federal, state and local government requirements. This system shall remain on-site, operational and be used until completion of Phase II C of the asbestos project.

(2) Rooms and Configuration. The personal decontamination system enclosure shall consist of a clean room, a shower room and an equipment room connected in series but separated from each other by airlocks. There shall be a curtained doorway separation between the equipment room and the regulated abatement work area, and there shall be a lockable door to the outside. (See Figure 1 within ICR 56) Minimum dimensions for each airlock, shower room and equipment room shall be three (3) feet wide by six (6) feet in height, to allow for adequate access to and from the regulated abatement work area.

(3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

(4) Framing. Enclosures systems accessible to the public shall be fully framed, hard-wall sheathed and utilize a lockable door for safety and security.

(5) Sheathing. A plywood or oriented strand board (OSB) sheathing material of at least 3/8-inch thickness.

(6) Plastic Sheeting. Enclosure systems constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for floor protection of this area.

(7) Prefabricated or Trailer Units. A completely watertight fiberglass or marine painted prefabricated unit does not require plasticizing. Rooms shall be configured as per paragraph (2) of this Section. All prefabricated or trailer decontamination units shall be kept in good condition, and shall be completely decontaminated after final cleaning and immediately prior to clearance air sampling. Upon receiving satisfactory clearance air results, the prefabricated units shall be sealed then separated from the regulated abatement work area and removed from the site.

(8) Clean Room. The clean room shall be sized to accommodate a full workshift of asbestos abatement contractor personnel, as well as the air sampling technician and the project monitor. The clean room shall be a minimum of six (6) feet in height. A minimum of thirty-two (32) square feet of floor space shall be provided for every six (6) full shift abatement workers,

calculated on the basis of the largest work shift. If the largest work shift consists of three (3) or less full shift abatement workers, the minimum clean room size requirement is reduced to twenty-four (24) square feet of floor space. Benches, lockers and hooks shall be provided for street clothes. Shelves for storing respirators shall be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for storage of tools, equipment or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the regulated abatement work area or enclosure and shall be used to secure the regulated abatement work area and decontamination enclosure during non-work hours.

(9) Shower Room. The shower room shall contain one (1) shower per every six (6) full shift abatement workers, calculated on the basis of the largest work shift. Multiple showers shall be simultaneously accessible (installed in parallel) to certified personnel. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected and filtered through a system with at least 5.0-micron particle size collection capability. Submersible pumps shall be installed, maintained and utilized in accordance with pertinent OSHA regulations and manufacturer's recommendations. A multi-stage filtering system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtering system by larger particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos-contaminated waste.

(10) Equipment Room. The equipment room shall be used for the storage of decontaminated equipment and tools. A one (1) day supply of replacement filters for HEPA-vacuums and negative pressure ventilation equipment in sealed containers, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A container lined with a labeled, at least six (6) mil plastic bag for collection of clothing shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.

(11) Airlocks. Airlock construction shall consist of two (2) curtained doorways with three (3) alternating six (6) mil fire retardant polyethylene curtains per doorway, separated by a distance of at least three (3) feet, such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the next doorway. Minimum airlock size shall be three (3) feet wide, by three (3) feet long, by six (6) feet in height.

C. Personal Decontamination System Enclosure - Small Project

(1) Enclosure Requirements. A personal decontamination system enclosure for a Small asbestos project shall consist of, at a minimum, an equipment room, a shower room and a clean room separated from each other and from the regulated abatement work area and other areas by curtained doorways as defined in ICR 56 Section 56-2.1. All other provisions for personal decontamination system for a Large asbestos project shall apply. Equipment storage, personal gross decontamination and removal of clothing shall occur in the equipment room just prior to entering the shower. (See Figure 4 in the ICR 56) The full personal decontamination system enclosure specified for Large asbestos projects is recommended.

D. Remote Personal Decontamination System Enclosure. If a personal decontamination system cannot be attached to the regulated abatement work area, due to available space restrictions or other building and fire code restrictions, a remote personal decontamination system enclosure may be used for limited Special Projects as per subpart 56-11, negative pressure tent enclosure work areas with glovebag only abatement, or if non-friable ACM is being removed in a manner which will not render the ACM friable.

Limitation. If it is found during removal, that the non-friable ACM or asbestos material will become friable during the removal process, and it is logistically possible to attach the decontamination system enclosure, abatement work must stop immediately while the remote personal decontamination system is relocated to be attached and contiguous to the regulated abatement work area.
The following requirements apply for all remote personal decontamination systems:

(1) Protective Clothing. Workers shall don two (2) sets of disposable protective clothing and a supply of protective clothing shall be kept in the airlocks attached to the regulated abatement work area.
(2) Location. The remote personal decontamination system shall be constructed as close to the regulated abatement work area as physically possible. If the remote personal decontamination system must be located at the exterior of the building/structure due to space or code restrictions, it shall be constructed within fifty (50) feet of the building/structure exit used for access by the asbestos abatement contractor personnel. The decontamination unit shall be cordoned off at a distance of twenty-five (25) feet to separate it from public areas.
(3) Airlocks. At a minimum, two (2) extra airlocks as defined in ICR 56 Section 56-2.1 shall be constructed as per ICR 56 Section 56-7.5(b)(11). One shall be constructed at the entrance to the equipment room or equipment/washroom. The other extra airlock shall be constructed at the entrance to the containment or regulated abatement work area(s). These airlocks shall have lockable doorways at the entrance to the airlock from

uncontaminated areas. These airlocks shall be cordoned off at a distance of twenty-five (25) feet and appropriately signed in accordance with ICR 56 Section 56-7.4(c). Airlocks shall not be used as a waste decontamination area and shall be kept clean and free of asbestos containing material.

(4) Designated Pathway. The walkway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area shall be cordoned off and signage installed as per ICR 56 Section 56-7.4(c), to delineate it from public areas while in use during Phase IIA through IID.

(5) Travel Through Uncontaminated Areas. If at any time a worker must travel through an uncontaminated area to access the personal decontamination area, the worker shall HEPA-vacuum and/or wet wipe his/her outer protective clothing while in the regulated abatement work area, then proceed into the airlock, which serves as a changing area, where he/she shall remove the outer clothing and don a clean set of protective clothing. The worker may then proceed to the personal decontamination system enclosure only along a designated pathway as described above. Travel in any other area shall not be allowed.

(6) Removal. The remote personal decontamination unit shall be removed only after satisfactory clearance air sampling results have been achieved.

E. Waste Decontamination System Enclosure - Large and Small Asbestos Projects.

(1) Enclosure – General. A waste decontamination system enclosure shall be provided outside the regulated abatement work area and shall be attached to the regulated abatement work area. One (1) waste decontamination enclosure for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The waste decontamination system enclosure shall be sized to accommodate the number of workers and equipment for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in

conformance to all federal, state and local government requirements. This system shall remain and be used until completion of Phase II C of the asbestos project.

(2) Rooms and Configuration. A waste decontamination system enclosure shall consist of a washroom and a holding area connected in series but separated from each other by an airlock. There shall be a lockable door to the outside, and there shall be a curtained doorway between the washroom and the regulated abatement work area. (See Figure 2 in the ICR 56)

(3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One (1) sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

(4) Washroom. A room/chamber between the regulated abatement work area and the holding area in the waste decontamination system enclosure, where equipment and waste containers are wet cleaned or HEPA-vacuumed. Adequate drainage and bag/container wash water shall be provided within the room/chamber, as well as a sufficient quantity of clean waste bags/containers.

(5) Equipment/Washroom Alternative. Where there is only one (1) exit from the regulated abatement work area, the holding area of the waste decontamination system enclosure may branch off from the equipment room of the personal decontamination system enclosure. The equipment room will also be used as a waste washroom. (See Figure 3 in the ICR 56)

(6) Plastic Sheeting. Waste decontamination system enclosures constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of these areas.

(7) Enclosure Security. The waste decontamination system enclosure and regulated abatement work area airlock(s) (when remote decontamination systems are used) shall be constructed with lockable doors to prevent unauthorized entry. Enclosures systems located within twenty-five (25) feet of an area of public access shall be fully framed and hard-wall sheathed for safety.

(8) Drains. The waste washroom shall be equipped with a wash bin of sufficient size to perform waste container washing operations and shall have a submersible pump installed to collect waste water and deliver it to the shower wastewater filtration system where it shall be filtered in accordance with paragraph (b)(9) of this Section.

(9) Shower/Washroom Alternative - Small Asbestos Project. For Small asbestos projects with only one (1) exit from the regulated abatement work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall be immediately removed from the enclosure. Waste shall be transferred only during times when the showers are not in use. (See Figure 4 in this Section)

F. Waste Decontamination System Enclosure – When Remote Personal Is Allowed. When a remote personal decontamination system enclosure is allowed and utilized for a regulated abatement work area, the following requirements shall apply:

(1) Minor Size Regulated Abatement Work Area. No specific waste decontamination system enclosure is required for minor size regulated abatement work areas. The waste generated shall be immediately bagged/containerized within the regulated abatement work area.

(2) Small & Large Size Regulated Abatement Work Areas.

(i) Washroom. An additional chamber shall be constructed within the regulated abatement work area, attached to the existing airlock used to access the work area. The washroom/airlock combination shall be utilized as the contiguous waste decontamination enclosure for waste bagging/containerization and waste transfer activities. The washroom shall be constructed and supplied with equipment/materials consistent with waste decontamination system enclosure washroom requirements for contiguous personal and waste decontamination system enclosures.

(ii) Removal. The washroom chamber shall be removed only after satisfactory clearance air sampling results have been achieved.

3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES:

A. General: The Contractor shall take all safety measures and precautions necessary to protect his/her employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state and city regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements.

1. After the installation of the personal decontamination system, full PPE in compliance with current OSHA regulations shall be worn in regulated abatement work areas during preparation activities, for all friable OSHA Class I or Class II asbestos projects. Asbestos abatement contractor's respirator selection, filter selection, medical surveillance and respiratory training must be consistent with current OSHA regulations. Appropriate respiratory protection is also required of all authorized visitors.

2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).

3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.

4. Entry to the personal and waste decontamination system enclosures shall be restricted to the asbestos contractors involved with the asbestos project, appropriately certified employees of the asbestos contractors, authorized visitors, police, fire and other public safety personnel.

5. Asbestos workers shall not wear any jewelry; e.g. watch, necklace, etc. while in the work area or decontamination area.

B. Worker Respiratory Protection: With approval from the Pelham Public Schools' Environmental Consultant, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on OSHA personal air monitoring of the "breathing zone" of his/her employees for other asbestos abatement projects, and the data were obtained during work operations conducted under work place conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Pelham Public Schools' Environmental Consultant for review of applicability. (See "Submittal, Pre-Project Information." This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may provide respirators as presented in the Specification. The minimum level of protection for TSI and/or Surfacing Materials abatements is full face-piece Powered Air Purifying Respirator (PAPR).

1. Review safety data sheets (SDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.

2. Personal Air Monitoring Requirements: The Contractor's CIH shall be responsible for development and implementation of a personal air monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein. Personal air monitoring shall be performed by an independent testing

laboratory and supervised by the Contractor's CIH. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any typical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantification"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.

3. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees, at least one sample per eight man crew) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to determine the Excursion Limit. Personal exposure sampling shall be repeated everyday as per protocol requirements where removal and cleanup operations are conducted for the duration of the project, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the OSHA Reference Method in OSHA Standard 29 CFR 1926.1101, Appendix B.

C. **Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing NYSDOL ICR 56-11.7 for Non Friable Flooring and/or Mastic Removal at the Facility:** The following entry/exit procedures shall be used for gross removal:

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.

2 All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site

supervisor shall be responsible for the maintenance of the log during the abatement activity.

3 Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.

4 Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.

5 Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

D. **Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing Full Decontamination Facility:** The following entry/exit procedures shall be used for gross removal using full containment.

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.

2 All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.

3 Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.

4 Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.

5 Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

E. **Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing NYSDOL ICR 56-11.6 for Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs:** The following entry/exit procedures shall be used for gross removal:

2. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.

2 All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.

3 Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.

4 Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.

5 Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.03 <u>PREPARATION OF WORK AREA</u>: The following Paragraph "General Preparations" outlines procedures applicable to all work areas. Work procedures specific for preparing each asbestos removal area is addressed in its respective Subparagraph. If a site specific variance is approved, procedures outlined in the variance will supercede this specification.

A. General Preparations: The following general preparations shall be used for all work areas being abated:

1. Erect barricades; post notices and warning signs.

2. Provide and install decontamination enclosure systems in accordance with Article 3.01, "Decontamination Enclosure Systems" of this Section.

3. Seal drains and other collection devices with 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.

4. Ensure that the Contractor's approved Fall Protection Equipment (if applicable) is in place, in operating condition, and in operation during work described in this section.

5. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.

6. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.

7. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped by manufacture with HEPA filtered local exhaust ventilation.

8. Hot and cold water may not be available in all work areas. In such cases sufficient heating equipment shall be provided to maintain a necessary supply of hot water for showers.

B. Friable Interior Asbestos-Containing Materials (Tent Enclosure):

1. Tent enclosure work areas shall at a minimum have decontamination areas installed and utilized, as per the requirements of Section 56-11.3.

2. Tents with greater than twenty (20) square feet of floor space, that are scheduled for gross removal of friable ACM, PACM, or asbestos material, shall be constructed of two (2) layers of six (6) mil fire-retardant plastic sheeting and shall include walls, ceiling and a floor (except for portions of walls, floors and ceilings that are the removal surface) with double folded seams. Seams shall be duct taped airtight and then duct taped flus h with the adjacent tent wall.

3. Tents with no gross removal of friable ACM, PACM or asbestos material, shall be constructed of one (1) layer six (6) mil fire-retardant plastic sheeting and shall include walls, ceiling and a floor (except for portions of walls, floors and ceilings that are the removal surface) with double –folded seams. Seams shall be duct taped airtight and then duct taped flush with the adjacent tent wall.

4. Tents or tent-like structures or enclosures shall be adequately supported and reinforced to withstand local environmental conditions and the negative pressures developed within them.

5. An airlock shall be constructed as per Section 56-7.5(b)(11), at the entrance to each tent that utilizes remote decontamination system facilities. Each tent and airlock shall be cordoned off twenty-five (25) feet from it perimeter, or the interior space/room where the tent and airlock is located shall be secured from non-certified personnel or public access, and signage shall be installed as per Section 56-7.4(c).

6. Manometers consistent with the requirements of Section 56-7.8(a)(4), are required for negative pressure tent enclosure regulated abatement work areas with OSHA Class I 12 NYCRR 56 Subpart 7, Page 69 abatement. Negative air shall be maintained at four (4) air changes per hour for non-friable and glovebag abatement tent enclosure work areas. Eight (8) air changes shall be maintained for friable gross removal tent enclosure work areas. If a HEPA-filtered vacuum is used for a Minor size abatement tent enclosure work area to maintain the required air changes, after final cleaning is completed twenty (20) minutes shall elapse, then ventilation may be stopped, clearance air samples collected if required, and the tent sealed until results are read. If air sample results are unacceptable, ventilation shall be re-established, the area recleaned and new samples taken.

C. Full Containment preparation for Gross Removal: The Contractor shall perform the following general and gross area preparations for each work area to undergo gross removal using full containment unless procedures outlined in an approved site specific variance are being followed.

1. Request that EUFSD's Environmental Consultant perform area monitoring and establish a background count prior to the preparatory operations for each removal area.

2. Erect barricades; post notices and warning signs.

3. Shut down, isolate, and lock out or tag heating, ventilating, and air conditioning (HVAC) systems which serve or which pass through the work area. Vents within the work area and seams in HVAC components shall be sealed with tape and two layers of plastic sheeting. Filters in HVAC systems shall be removed and treated as asbestos-contaminated waste.

4. Shut down, disconnect, and lock out or tag all electric power to the work area so that there is no possibility of its reactivation until after clearance testing of the work area.

5. Provide and install decontamination enclosure systems in accordance with Article 3.01 (B), "Decontamination Enclosure Systems". Prior to installation of decontamination enclosure system, the floor area shall be covered with one layer of 6-mil plastic sheeting and then 1/2 inch rigid flooring prior to normal decon construction. This procedure (to be implemented only when required) is necessary to protect the existing carpet from being contaminated.

6. Seal floor drains, sumps and other collection devices with two layers of 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.

7. Ensure that the Contractor's communication equipment is in place, in operating condition, and in operation during work described in this Section.

8. Separate by means of airtight barriers (isolation barriers) parts of the building that are not included in the work area(s) from parts of the building that will undergo asbestos abatement.

9. Seal with isolation barriers: open doorways, cased openings, and corridors which will not be used for passage during work. Any opening equal to or more than 32 square feet shall be sealed with solid (plywood or oriented strand board sheathing material of at least 3/8-inch thickness fastened to the regulated abatement work area side of the barrier partition) isolation barriers, except that where any one dimension is one foot or less.

10. Isolation barriers shall extend from the floor to the drop ceiling and form an airtight seal. They shall be built using wood or metal framing at 24-inch on-center faced with plywood sheathing, and shall be braced as necessary. Both sides of the isolation barrier shall be covered with a double layer of 6-mil plastic sheeting, with joints staggered and sealed with tape. Edges of the temporary partition at the floor, walls, and ceiling shall be taped and caulked airtight. Isolation barriers larger than 32 square feet shall be

sheathed on the work area side with 3/8 inch plywood or oriented strand board (OSB) sheathing.

11. Completely seal airtight and isolate the work area. All openings, including but not limited to doorways, windows, tunnels, ducts, grilles, cracks, diffusers, openings through which pipe conduit passes, and any other penetrations of the work area, shall be covered with plastic sheeting taped or caulked airtight. Refer to updated ICR 56 for the elevator shaft ports isolation details.

12. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with fluorescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.

13. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.

14. After sealing and plasticizing the area install and initiate operation of at least two air filtration devices to provide a negative pressure of at least -0.02 inches of water and four (4) changes per hour within the work area relative to surrounding non-work areas. Do not shut down AFD's until the work area is released to the Owner following final clearance procedures. All air filtration device filters shall be new and shall be installed on-site under the supervision of EUFSD's Environmental Consultant. The contractor shall utilize Applicable Variance-A-2 (AV-A-2) at the locations with negative unit exhaust greater than 25 foot in length.

15. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be manufacture equipped with HEPA-filtered local exhaust ventilation.

16. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid work area surface.

17. Work Area Precleaning Procedures: After establishing the decontamination enclosure system, prepare and pre-clean the work area as specified below and as indicated by the drawing notes:

    a. Movable and loose items not removed by the facility from work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate and shall be removed from the work area and stored at the Owner's direction.

b. Movable and loose items contaminated with asbestos shall be wrapped or placed in labeled ACM bags. Sealed ACM bags shall be removed from the work areas and properly discarded as asbestos-contaminated waste.

c. Fixed objects within the work area shall be pre-cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Joints of covers or casings shall be sealed with tape and fixed objects enclosed with a minimum of two layers of 6-mil plastic sheeting sealed airtight with tape. Disassembly of these fixed objects is not required unless otherwise noted. Fixed objects shall include, but not be limited to, light fixtures, junction boxes, hangers and black carrying channels.

d. Prior to being plasticized, the work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.

18. Plasticize the area after pre-cleaning, using the following procedure:

a. Cover floor with one layer of 6-mil plastic sheeting, turning layer a minimum of 12 inches up wall, and seal layer to wall.
b. Cover walls with one layer of 6-mil plastic sheet, lapping wall layer a minimum of 12 inches, and seal layer to floor layer.
c. Cover ceiling with one layer of 6-mil plastic sheet, lapping wall layer a minimum of 12 inches, and seal layer to wall layer
c. Repeat procedure for second layer. All joints in plastic sheets shall be glued and taped in such a manner as to prohibit air passage. All seams within a layer shall be separated by a distance of at least six (6) feet and sealed airtight with duct tape. All seams between layers shall be staggered at least two (2) feet.

19. Areas immediately adjacent to removal areas, such as corridors or hallways which are not in work areas but are necessary routes to and from work areas, shall be protected with two layers of 6-mil plastic sheet on floors and two layers of 6-mil plastic sheet on walls and ceilings.

D. Non-Friable Asbestos-Containing Floor Tile & Mastic Materials:

1. A remote personal decontamination system enclosure that complies with Subpart 56-7.5 for small projects shall be utilized. The decontamination system shall be installed or constructed before any preparatory work in the

work area and before any disturbance of asbestos material. The decontamination enclosure system shall be located as close to the work area as possible. The decontamination unit may be mobile.

2. An airlock and attached washroom constructed of one (1) layer of 6 mil. polyethylene sheeting shall be attached to work area.

3. The work area, decontamination units, airlocks and dumpster shall be cordoned off with asbestos warning tape and signs at a distance of ten (10') feet where feasible and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved.

4. All access areas between the work area and the decontamination enclosure system shall be restricted or cordoned off with caution tape and signage directing the traffic pattern of non-certified MTA/NYCT workers and the public while in use by certified asbestos workers.

5. All electric power in the work area shall be shut down and locked out. In the event this is not possible as per 56-7.7 (c), the live electric shall be maintained within those conduits, cables, panels and boxes as per following conditions:

   a) All live cables, electrical panels and boxes that run through the work areas shall be wrapped with three (3) layers of 6-mil plastic sheeting. Each layer shall be individually taped and sealed separately. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air monitoring results have been obtained.

   b) Any energized circuits remaining in the work areas shall be posted with a two (2) inch high lettering warning sign which reads: DANGER-LIVE ELECTRICAL-KEEP CLEAR. The sign shall be placed on all live covered barriers at maximum of (10) ten-foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work areas of the existence of the energized circuits.

   c) All electrical power for the removal project shall be brought into the work area through a separate GFI panel box located outside the work area.

6. Critical/isolation barriers shall be constructed in the Work Area using minimum of two layers of 6-mil polyethylene sheeting and plywood (where required). Alternatively, the contractor has the option to perform the work utilizing a Tent Enclosure. If a Tent enclosure is utilized, it shall be constructed in accordance with IRC 56 Subpart 7.11 (f) (1). The Work Area shall be exhausted utilizing negative air units to achieve six (6) air changes per hour for critical/isolation barrier work areas or four (4) air changes per hour for Tent Enclosure work areas. Sufficient negative air handling equipment shall be utilized on site in order to achieve required negative air pressure within the work area (See Appendix A).

7. Due to site restrictions, negative air units cannot be exhausted greater than fifteen (15) feet outside of the building receptor as per the requirements of ICR 56-7.8 (11). Therefore, negative air units shall be connected in series and exhausted outside the work area and into a plywood box. The box shall be cordoned off with proper caution tape and signage and shall be constructed of a minimum of 1' x 1' x 1' with a HEPA pre-filter covering the exhaust end. There shall be one box per negative air unit exhaust.

8. A four (4) hour pre-abatement settling period is required prior to commencement of ACM floor tiles removal activities.

E. Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs:

1. A remote personal decontamination system enclosure that complies with Subpart 56-7.5 for small projects shall be utilized. The decontamination system shall be installed or constructed before any preparatory work in the work area and before any disturbance of asbestos material. The decontamination enclosure system shall be located as close to the work area as possible. The decontamination unit may be mobile.

2. All openings (including operable windows, doors, ducts, grilles, communicating openings, etc.) one (1) story above and one (1) story below the roof level of the regulated abatement work area (this includes any building/structure within twenty-five (25) feet of the immediate work area), shall be sealed directly with two (2) layers of at least six (6) mil flame-retardant plastic sheeting. All vent openings which cannot be sealed shall be extended vertically a minimum of eight (8) feet and remain in operation.

3. A polyethylene drape or curtain may be used instead of plasticizing the windows individually. The drape may be removed after the asbestos project is complete.

4. The work area, decontamination units and dumpster shall be cordoned off with asbestos warning tape and signs at a distance of ten (10') feet where feasible and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved.

5. All access areas between the work area and the decontamination enclosure system shall be restricted or cordoned off with caution tape and signage directing the traffic pattern of non-certified workers and the public while in use by certified asbestos workers.

6. All electric power in the work area shall be shut down and locked out. In the event this is not possible as per 56-7.7 (c), the live electric shall be maintained within those conduits, cables, panels and boxes as per following conditions:

   a) All live cables, electrical panels and boxes that run through the work areas shall be wrapped with three (3) layers of 6-mil plastic sheeting. Each layer shall be individually taped and sealed separately. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air monitoring results have been obtained.

   b) Any energized circuits remaining in the work areas shall be posted with a two (2) inch high lettering warning sign which reads: DANGER-LIVE ELECTRICAL-KEEP CLEAR. The sign shall be placed on all live covered barriers at maximum of (10) ten-foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work areas of the existence of the energized circuits.

   c) All electrical power for the removal project shall be brought into the work area through a separate GFI panel box located outside the work area.

3.04 PRE-REMOVAL INSPECTIONS:

A. Prior to removal of any ACM the Contractor shall notify the Pelham Public Schools' Environmental Consultant and request a pre-removal inspection. Posting of warning signs, plasticizing of work area, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of Pelham Public Schools' Environmental Consultant. The Contractor shall not begin asbestos removal until the Pelham Public Schools' Environmental Consultant approves the work area preparations.

3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS:

A. Repair damaged barriers and remedy any defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.

B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of twice each 8- hour work shift.

C. Ensure that both hot and cold water exist in sufficient supply for the decontamination enclosure system.

3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL: The Asbestos Contractor shall be responsible for the proper removal of ACM from the Work Area using standard abatement industry removal techniques. The Environmental Consultant or their representative shall observe the Work. Approval of the Asbestos Contractor's abatement techniques is required by the Environmental Consultant to allow for the continuance of work.

1. Removal of Interior Friable Asbestos-Containing Materials (Tent Enclosure):

1. All persons shall don appropriate personal protective equipment before entering the tent in compliance with current OSHA regulations. Authorized visitors entering the tent shall also don NIOSH-approved respiratory protection.

2. A HEPA-vacuum or other negative pressure HEPA-filtered ventilation equipment shall be used to continuously exhaust 12 NYCRR 56 Subpart 11, Page 100 the tent in accordance with Sections 56-7.8(a) and 56-7.11(f)(1).

3. All material to be removed shall be saturated with amended water as specified in this Part.

4. Asbestos material shall be removed and sealed in plastic bags prior to removal from tent. Edges of asbestos material remaining shall be encapsulated or sealed with wettable cloth.

5. The substrate from which asbestos was removed and any exposed edges shall be sealed with encapsulant.

2. Thermal System Insulation and Surfacing Materials Removal: The Contractor shall use work methods and equipment which will keep the fiber count during abatement operations inside the work area to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.

1. Removal of asbestos-containing material using full containment procedures (large projects).

a. Prepare the area as described in Subparagraph "Gross Removal Area Preparations" of this Section. Remove aluminum lagging from piping and equipment while providing a continual mist of amended water or removal encapsulant to the insulation, leaving it intact. Spray asbestos materials with a fine mist of amended water or removal encapsulant, saturating materials to substrate. Spray the

asbestos material repeatedly during work process to maintain a wet condition and to minimize asbestos fiber dispersion.

b. Remove the saturated asbestos material in small sections. As it is removed, pack the material in sealable plastic bags which shall be placed in labeled drums for transport. Remove insulation materials carefully from equipment; do not permit them to fall to the floor.

c. After completion of all stripping work, surfaces from which ACM have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue. (Do not use wire brushes.)

d. After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed then wet cleaned and transferred into the shower room for double bagging. The goose-neck and double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.

e. All accumulations of asbestos waste material shall be containerized and removed. Non-metal shovels and HEPA-vacuums may be used to pick up or move waste except in the vicinity of isolation barriers which might be breached. The areas around isolation barriers shall be cleaned utilizing rubber or plastic dustpans, squeegees or shovels. HEPA-vacuums shall be used to clean all surfaces after gross cleanup.

f. First Cleaning, Lockdown Encapsulation and Top Layer Removal. All surfaces of the regulated abatement work area shall be first wet-cleaned using rags, mops and sponges. For collecting excess liquid and wet debris, a wet purpose HEPA filtered shop vacuum may be used and shall be emptied prior to removal from the regulated abatement work area. When the first cleaning has been completed, a thin coat of a lockdown encapsulant agent shall be applied to all surfaces within the regulated abatement work area which were not the subject of removal or abatement. In no event shall lockdown encapsulant be applied to any surface which was the subject of removal or other abatement response activity, prior to obtaining satisfactory clearance air results for the regulated abatement work area. Once the lockdown encapsulant has been applied, and the appropriate waiting/settling or drying time requirements of ICR 56 have been met, the cleaned, exposed top barrier layer of plastic sheeting shall then be removed from walls, ceilings and floors. Windows, doors, HVAC system vents and other openings shall remain sealed. Decontamination system enclosures shall remain in place and shall continue to be utilized.

g. Second Cleaning and Bottom Layer Removal.. After the first cleaning, at least twelve (12) hours shall be allowed for asbestos to settle. After the top layer of plastic sheeting has been removed, all objects and surfaces in the regulated abatement work area shall be HEPA-vacuumed and then wet-cleaned. After the second cleaning and waiting/settling or drying time requirements of this Subpart, then the remaining bottom layer of plastic sheeting on walls, ceilings and floors shall be removed. All windows, doors, HVAC system vents and all other openings shall remain sealed.

h. Third or Final Cleaning and Visual Inspection. After the bottom layer of plastic sheeting has been removed, all objects and surfaces in the regulated abatement work area shall be HEPA-vacuumed and then wet-cleaned. After the final cleaning is complete, clearance air sampling shall not commence until the appropriate waiting/settling or drying time requirements of ICR 56 have elapsed and a visual inspection has been completed by the project monitor to confirm that the scope of abatement work for the asbestos project is complete, and no visible asbestos debris/residue, pools of liquid, or condensation remain. The asbestos abatement contractor supervisor must complete a satisfactory visual inspection for completeness of abatement and cleaning, prior to commencement of the project monitor visual inspection.

3. Removal of Non-Friable Asbestos-Containing Floor Tile & Mastic Materials:

1. Residual non-friable ACM shall be wet scraped by manual means and HEPA vacuumed. Materials removed shall be containerized or immediately wrapped in two (2) layers of six (6) mil fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility.

2. Asbestos containing materials will not be allowed to accumulate in the work area

4. Removal of Exterior Project Removal of Non-friable ACM Roofing, Siding, Caulking, Glazing Compound, Transite, Tars, Sealers, Coatings, and Other NOB ACMs:

1. Removal of ACM shall utilize manual wet methods for all non-friable ACM removals, and rotating blade roof cutters for roofing removals, as applicable. In no event shall methods be used that may render the ACM friable.

a) Residual non-friable ACM shall be wet scraped and HEPA vacuumed. Materials removed shall be containerized or immediately wrapped in two (2) layers of six (6) mil fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility.

b) Asbestos containing materials will not be allowed to accumulate in the work area or on the drop cloth.

2. Clean-up procedures shall be performed during abatement. Visible accumulations of loose asbestos containing waste material shall be cleaned up using rubber or plastic dustpans and rubber squeegees or HEPA filtered vacuums. Metal shovels may also be used, except in the vicinity of plastic sheeting, critical barriers and isolation barriers, which could be perforated by these tools. To pick up excess water and gross wet debris, a wet-dry HEPA filtered shop vacuum dedicated to asbestos abatement may be used. This cleaning shall be done whenever there is sufficient asbestos waste material to fill a single leak-tight bag/container, or this cleaning shall be done at the end of each work shift whichever shall occur first. Visible debris shall be maintained adequately wet

3. Final clean-up and clearance procedures for abatement shall comply with Section 56-9, except that only one (1) stage of cleaning (final) is to be performed. Lockdown encapsulant use is not required.

4. Final Waste Removal From the Site. The requirements of Subpart 56-10 shall apply, once all asbestos project regulated abatement work areas have been completed.

5. Additional Removal Requirements:

A. Pelham Public Schools' Environmental Consultant shall issue a stop work order if visible emissions are detected outside the work areas and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques and the Contractor receives written notice from Pelham Public Schools' Environmental Consultant.

3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES:

A. Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, New York City Department of Sanitation (in relation to transport, storage, and disposal of ACM) and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil plastic sheeting wrapped airtight and properly labeled. Materials to be transported through a non-Work Area building space shall be placed in hard wall shipping containers for handling. Specific requirements for decontamination of waste containers, and load out through the decontamination enclosure systems is outlined below:

B. Frequency of Waste Removal: Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site. The waste hauler and landfill shall be as indicated on the notifications to regulatory agencies.

C. Waste Load-out Through Waste Decontamination Unit: Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.

D. The clean containerized items shall be moved directly to the Waste Hauler's truck pending load-out to storage or disposal facilities.

E. Workers who have entered the decontamination enclosure system from the uncontaminated non-work area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.

F. Thoroughly clean the decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.

G. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, whether turned inside out or not, shall be handled and disposed of as ACM waste.

3.08 CLEANUP AND CLEARANCE TESTING OF WORK AREAS: The following clean-up procedures shall be performed during abatement.

A. Visible accumulations of loose asbestos containing waste material shall be cleaned up using rubber or plastic dustpans and rubber squeegees or HEPA filtered vacuums. Metal shovels may also be used, except in the vicinity of plastic sheeting, critical barriers and isolation barriers, which could be perforated by these tools. To pick up excess water and gross wet debris, a wet-dry HEPA filtered shop vacuum dedicated to asbestos abatement may be used. This cleaning shall be done whenever there is sufficient asbestos waste material to fill a single leak-tight bag/container, or this cleaning shall be done at the end of each work shift whichever shall occur first. Visible debris shall be maintained adequately wet.

B. Work shall stop whenever excessive water accumulation or flooding is present in the area and shall not resume until the water is collected and disposed of properly.

3.09 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE:

A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled bags of ACM from the Work Area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. The waste container shall be lined with two layers of 6-mil fire retardant plastic on all sides. Asbestos-containing waste shall remain under the positive control of the Asbestos Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access. Containerized ACM shall be removed from the site on a daily basis. Unless specifically approved in writing by the Owner, ACM shall not be permitted to be stored on site during non-working hours.

B. Sealed and labeled bags or waste wrapped in two layers of plastic sheeting sealed airtight shall be used to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the Work Area and disposal of waste are outlined below:

C. A properly completed and original "Waste Shipment Record" form shall accompany asbestos waste, which is transported to a disposal site. This form shall be signed and dated by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. All original manifest forms and waste receipts shall be provided to the Architect. The Environmental Consultant shall be provided with copies of all waste manifests.

D. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste container en-route to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.

E. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d) (I).

F. Only sealed plastic bags or completely sealed items shall be deposited in landfill. Damaged, broken sealed windows or leaking plastic bags shall be resealed prior to being deposited in the landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.

G. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL		DATE SUBMITTED	DATE APPROVED
Pre-Project Submittal:			
1.	Insurance	_____	_____
2.	All required bonds	_____	_____
3.	List of Subcontractors	_____	_____
4.	Health and Safety Plan	_____	_____
5.	Proof that all required permits and variances have been obtained	_____	_____
6.	Documentation of Required Qualifications of Workers	_____	_____
7.	Proof of a respiratory protection program.	_____	_____
8.	Proof of historic airborne fiber data.	_____	_____
9.	Proof that a landfill site has been located.	_____	_____
10.	SDS of chemicals to be used on this project.	_____	_____
11.	Asbestos Removal and Disposal Work Plan	_____	_____
During Work Submittal:			
1.	Schedule of Work Changes	_____	_____
2.	Notarized copy of weekly payroll showing a prevailing wage rate has been paid.	_____	_____
3.	A "Request For Services" form.	_____	_____
4.	Results of all air monitoring performed by the Contractor (OSHA)	_____	_____

5.	A certified, signed, and completed copy of each " Waste Shipment Record" form (Section 1.07)	_____	_____
6.	A copy of the bound log book	_____	_____

Post Project Submittal:

1.	A notarized "Release of Liens"	_____	_____
2.	Proof of payment of prevailing wage rate	_____	_____
3.	Notarized copies of a daily log.	_____	_____
4.	Compilation in chronological order of all air monitoring records pertaining to this project.	_____	_____
5.	Compilation of all completed and signed Waste Shipment Record forms.	_____	_____
6.	Copies of notifications to applicable agencies.	_____	_____
7.	Paid invoice verifications for sub-contractor (for Time and Material job), service contract agreement, insurance certificates, copies of the workers licenses, and other required submittals.	_____	_____

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SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of a building or structure.
2. Salvage of selected building components and elements.
3. Repair procedures for selective demolition operations.
4. Temporary bracing and shoring of the structure

B. Related Sections include the following:

1. Division 01 General Requirements for temporary construction and environmental-protection measures for selective demolition operations.
2. Division 01 General Requirements for cutting and patching procedures for selective demolition operations.
3. Division 04 Section “Masonry Replacement Work” for removal of existing damaged and deteriorated masonry.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DESIGN REQUIREMENTS

A. General: The stability and integrity of the structure during construction shall be maintained at levels generally acceptable within the construction industry by the use of

bracing and shoring. In no case shall the structure be allowed to become unsafe during construction as defined by the local governing jurisdiction. Design stresses in bracing and shoring shall not exceed the allowable stresses indicated in the Building Code of New York State and its referenced standards.

B. Bracing and Shoring for Structures: The bracing and shoring systems required to provide temporary support of a structure or portions of a structure during construction shall be designed to support the dead, live, soil, earthquake and wind loads that may be imposed on the structure during construction in accordance with industry standards and generally accepted engineering principles.

1. The proposed bracing and shoring systems shall have foundations designed for allowable soil bearing pressures in accordance with the geotechnical investigation prepared for the Project. If foundations are determined not necessary, an engineering analysis of the existing substrate shall be submitted for review.

1.5 SUBMITTALS

A. Shop Drawings indicating layout, member sizes, connection details and construction sequence for bracing and shoring. No work related to bracing and shoring shall take place until Shop Drawings have been reviewed and approved by the Architect.

B. Design calculations of bracing and shoring showing member stresses and connections due to imposed loads. Calculations shall be signed and sealed by a Professional Engineer registered in New York State.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Proposed Dust-Control, Noise-Control and Other Special Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

E. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and continuation of utility services.

F. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

G. Predemolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Professional Engineer Qualifications: Comply with Division 01 General Requirements.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 01 General Requirements.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of site and buildings immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 2 weeks' notice to Owner of activities that will affect Owner's operations.

B. Owner may elect to salvage certain items from areas of construction other than those indicated on Drawings as “salvage” prior to selective demolition operations. Give 2 weeks notice to Owner prior to commencing any selective demolition processes to allow for Owner salvage operations.

C. Maintain access to existing walkways, roadways, and other adjacent occupied or used facilities.

1. Do not close or obstruct walkways, roadways, or other occupied or used facilities without written permission from authorities having jurisdiction.

D. Owner assumes no responsibility for condition of areas to be selectively demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

E. Hazardous Materials: Remediation of existing hazardous materials, if any, will be completed prior to commencement of selective demolition in the areas where hazardous materials are present.

1. If materials suspected of containing hazardous materials that have not been previously identified in the Contract Documents are encountered, do not disturb; immediately notify Architect and Owner.
2. A hazardous materials report is included in the Specifications for information only.

F. Storage or sale of removed items or materials on-site will not be permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

H. Cutting and Patching of Existing Roofing System: Contractors performing cutting and patching of the existing roof membrane shall be certified installers by the existing roof membrane manufacturer for their products. When existing roofing system is still under warranty, coordinate all work on the existing roofing system with manufacturer. All cutting and patching work on roofing system shall be performed in a manner that does not void the warranty.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

2.2 SHORING MATERIALS

A. Materials for shoring and bracing shall be consistent with the approved shop drawings and calculations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.

1. Provide at least 2 weeks' notice to Owner if shutdown of service is required during changeover.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.

1. Arrange to shut off indicated utilities with utility companies.
2. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
4. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent site improvements, structures and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Provide special protection measures as required by Owner.

D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects

E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SHORING

A. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

B. Construction of bracing and shoring shall be in accordance with the reviewed Shop Drawings prepared by the Contractor's Engineer.

C. The Contractor shall hire the Engineer responsible for the design of bracing and shoring and inspection of the work as detailed on the bracing and shoring Shop Drawings, prior to sawcutting or removing portions of the structure.

D. Wherever shoring is required, locate the system to clear permanent construction and to permit forming and finishing of concrete surfaces. Provide shoring system adequately anchored and braced to resist dead, live, soil, earthquake and wind loads that may be imposed on the structure during construction in accordance with industry standards and generally accepted engineering principles.

E. Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move a brace, install new bracing prior to removal of original brace.

F. Do not place bracing where it will be cast into or included in permanent concrete and other work, except as otherwise acceptable to Architect.

G. Maintain bracing until structural elements are braced by permanent construction able to withstand dead, live, soil, earthquake and wind loads that may be imposed on the structure during construction.

3.5 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.6 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining

construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.
10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

B. Removed and Salvaged Items: Comply with the following:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items: Comply with the following:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Salvage items indicated on the Drawings as “salvage”.

E. Existing Facilities: Comply with Owner’s requirements for using and protecting elevators, stairs, walkways, building entries, and other building facilities during selective demolition operations.

F. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

G. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

H. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

I. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

J. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.7 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 01 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.

D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.8 REMOVAL OF SHORING AND BRACING

A. Bracing and shoring shall not be removed until the new members have acquired sufficient strength to support their weight and the loads superimposed thereon safely. In no case may bracing or shoring be removed until the time and sequence has been approved by the Engineer responsible for bracing and shoring and reviewed by the Architect.

B. Repair or replace adjacent work damaged or displaced through the installation or removal of shoring and bracing work. Match existing construction.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 024119

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Form-facing materials.
2. Form liners.
3. Waterstops.

1.2 DEFINITIONS

A. Form-Facing Material: The temporary form materials that come in direct contact with the concrete as part of the formwork components in supporting the concrete while the concrete is setting and gaining sufficient strength to be self-supporting. The most common materials are steel, aluminum, and wood.

B. Form Lining: Materials used to line the concreting face of formwork to impart a smooth or patterned finish to the concrete surface, to absorb moisture from the concrete, or to apply a set-retarding chemical to the formed surface of the concrete.

C. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.

1. For exposed vertical concrete walls, indicate dimensions and form tie locations.
2. Indicate dimension and locations of construction and movement joints required to construct the structure in accordance with ACI 301.

    a. Location of construction joints is subject to approval of Architect.

3. Indicate location of waterstops.
4. Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

a. For architectural concrete specified in Section 033300 "Architectural Concrete," limit deflection of form-facing material, studs, and walers to 0.0025 times their respective clear spans (L/400).

2.2 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.
2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-in-Place Concrete, and as follows:

a. Plywood, metal, or other approved panel materials.
b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

1) APA HDO (high-density overlay).

B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.

1. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces not exceeding specified formwork surface class.

1. Provide forms with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation, with straight or tapered end forms.

2.3 WATERSTOPS

A. Flexible PVC Waterstops: U.S. Army Corps of Engineers' CE CRD-C 572, for embedding in concrete to prevent passage of fluids through joints, with factory-fabricated corners, intersections, and directional changes.

1. Profile: Flat dumbbell with center bulb
2. Dimensions: 4 by 3/16 inch thick nontapered.

B. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

2.4 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch- thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
2. Form release agent for form liners to be acceptable to form liner manufacturer.

F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.

G. Sealant: One-part moisture cure silicone sealant used with form liners.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

A. Comply with ACI 301.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-in-Place Concrete" for as-cast finishes.

C. Limit concrete surface irregularities as follows:

1. Surface Finish-1.0: ACI 117 Class D, 1 inch.
2. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.
3. Surface Finish-3.0: ACI 117 Class A, 1/8 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

1. Minimize joints.
2. Exposed Concrete: Symmetrically align joints in forms.

E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.

1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
3. Install keyways, reglets, recesses, and other accessories, for easy removal.

F. Do not use rust-stained, steel, form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.

1. Provide and secure units to support screed strips
2. Use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.

1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
2. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.

1. Determine sizes and locations from trades providing such items.
2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.

L. Form Liners: Install per manufacturer's written installation instructions and recommended tolerances.

M. Construction and Movement Joints:

1. Construct joints true to line with faces perpendicular to surface plane of concrete.
2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
3. Place joints perpendicular to main reinforcement.
4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.

    a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
6. Space vertical joints in walls as indicated on Drawings.

    a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

N. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

O. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

P. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

Q. Coat contact surfaces of forms with form-release agent, in accordance with manufacturer's written instructions, before placing reinforcement.

3.2 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
5. Clean embedded items immediately prior to concrete placement.

3.3 INSTALLATION OF WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm.

1. Install in longest lengths practicable.
2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
3. Allow clearance between waterstop and reinforcing steel of not less than 2 times the largest concrete aggregate size specified in Section 033000 "Cast-in-Place Concrete."
4. Secure waterstops in correct position at 12 inches o.c.
5. Field fabricate joints in accordance with manufacturer's written instructions using heat welding.

    a. Miter corners, intersections, and directional changes in waterstops.
    b. Align center bulbs.

6. Clean waterstops immediately prior to placement of concrete.
7. Support and protect exposed waterstops during progress of the Work.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated on Drawings, in accordance with manufacturer's written instructions, by adhesive bonding, mechanically fastening, and firmly pressing into place.

1. Install in longest lengths practicable.
2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
3. Protect exposed waterstops during progress of the Work.

3.4 REMOVING AND REUSING FORMS

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations

need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work.

1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
2. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

1. Align and secure joints to avoid offsets.
2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.

C. Prepare test and inspection reports.

END OF SECTION 031000

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For structural thermal break insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of Architect.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage and to avoid damaging coatings on steel reinforcement.

1. Store reinforcement to avoid contact with earth.
2. Do not allow epoxy-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

B. Headed-Steel Reinforcing Bars: ASTM A970/A970M.

C. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from

as-drawn steel wire into flat sheets.

2.2 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.

C. Mechanical Splice Couplers: ACI 318 Type 1, same material of reinforcing bar being spliced; tension-compression type.

D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

2.3 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.
2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars to be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
2. Stagger splices in accordance with ACI 318.
3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.

G. Install welded-wire reinforcement in longest practicable lengths.

1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."

    a. For reinforcement less than W4.0 or D4.0, continuous support spacing to not exceed 12 inches.

2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.
3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
4. Lace overlaps with wire.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.
2. Continue reinforcement across construction joints unless otherwise indicated.
3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel-reinforcement placement.
2. Steel-reinforcement mechanical splice couplers.

END OF SECTION 032000

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete standards.
2. Concrete materials.
3. Admixtures.
4. Fiber reinforcement.
5. Vapor retarders.
6. Floor and slab treatments.
7. Liquid floor treatments.
8. Curing materials.
9. Accessories.
10. Repair materials.
11. Concrete mixture materials.
12. Concrete mixture class types.
13. Concrete mixing.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, and waterstops.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.
3. Section 312000 "Earth Moving" for drainage fill under slabs-on-ground.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement or blended hydraulic cement alone or in combination with one or more of the following:

1. Fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cementitious Materials (w/cm) Ratio: The ratio by weight of mixing water to cementitious materials.

1.3 ACTION SUBMITTALS

A. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.

2. Compressive strength at 28 days or other age as specified.
3. Compressive strength required at stages of construction.
4. Durability exposure classes for Exposure Categories F, S, W, and C.
5. Maximum w/cm ratio.
6. Calculated equilibrium and fresh density for lightweight concrete.
7. Slump or slump flow limit.
8. Air content.
9. Nominal maximum aggregate size.
10. Intended placement method.
11. Submit adjustments to design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant changes.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified Installer who employs Project personnel qualified as an ACI-certified Concrete Flatwork Associate and Concrete Flatwork Finisher and a supervisor who is a certified ACI Advanced Concrete Flatwork Finisher/Technician or an ACI Concrete Flatwork Finisher with experience installing and finishing concrete.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.6 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 as follows:

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
2. When air temperature has fallen to, or is expected to fall below 40 deg F during the protection period, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
3. Do not use frozen materials or materials containing ice or snow.
4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE STANDARDS

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I, gray.
2. Pozzolans: ASTM C618, Class C, F, or N.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
4. Ground Glass Pozzolan: ASTM C1866/C1866M, Type GS or GE.
5. Silica Fume: ASTM C1240.

C. Normal-Weight Aggregates:

1. Coarse Aggregate: ASTM C33/C33M, Class 3S.
2. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
3. Fine Aggregate: ASTM C33/C33M.
4. Recycled Aggregate: Provide documentation of characteristics of recycled aggregate and mechanical properties and durability of proposed concrete, which incorporates recycled aggregate to conform to appliable requirements for the class of concrete.

2.3 ADMIXTURES

A. Air-Entraining Admixture: ASTM C260/C260M.

B. Chemical Admixtures: Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
6. Admixtures with special properties, with documentation of claimed performance enhancement, ASTM C494/C494M, Type S.

C. Mixing Water for Concrete Mixtures and Water Used to Make Ice: ASTM C1602/C1602M. Include documentation of compliance with limits for alkalis, sulfates, chlorides, or solids content of mixing water from Table 2 in ASTM C1602/C1602M.

2.4 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A. Include manufacturer's recommended thickness and adhesive or pressure-sensitive tape.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

a. Ambient Temperature Below 50 deg F (10 deg C): Black.
b. Ambient Temperature between 50 and 85 deg F (10 and 29 deg C): Any color.
c. Ambient Temperature Above 85 deg F (29 deg C): White.

D. Curing Paper: 8 ft. wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.

E. Water: Potable water that does not cause staining of the surface.

F. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

2.6 ACCESSORIES

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 in accordance with ASTM D2240.

C. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin, capable of

humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.8 CONCRETE MIXTURE MATERIALS

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland or hydraulic cement in concrete exposed to deicing chemicals:

1. Fly Ash or Other Pozzolans: 25 percent by mass.
2. Slag Cement: 50 percent by mass.
3. Silica Fume: 10 percent by mass.
4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent

by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

2.9 CONCRETE MIXTURE CLASS TYPES

A. Class A: Normal-weight concrete used for footings, grade beams, tie beams, interior walls, and interior piers.

1. Exposure Class: ACI 318 Class F1 Class S1 Class W2 Class C1.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

B. Class B: Normal-weight concrete used for foundation walls.

1. Exposure Class: ACI 318 Class F2 Class S1 Class W2 Class C1.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

C. Class C: Normal-weight concrete used for foundation walls extending above grade that can experience accumulation of snow and ice with deicing chemicals.

1. Exposure Class: ACI 318 Class F3 Class S1 Class W2 Class C2.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

D. Class D: Normal-weight concrete used for interior slabs-on-ground.

1. Exposure Class: ACI 318 Class F0 Class S1 Class W0 Class C0.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.

4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

E. Class E: Normal-weight concrete used for interior suspended slabs.

1. Exposure Class: ACI 318 Class F0 Class S1 Class W0 Class C0.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

F. Class F: Normal-weight concrete used for exterior slabs-on-ground.

1. Exposure Class: ACI 318 Class F3 Class S1 Class W2 Class C2.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

G. Class G: Normal-weight concrete used for exterior suspended slabs.

1. Exposure Class: ACI 318 Class F3 Class S1 Class W2 Class C2.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

H. Class H: Structural lightweight concrete used for interior suspended slabs.

1. Exposure Class: ACI 318 Class F0 Class S1 Class W0 Class C0.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

I. Class J: Structural lightweight concrete used for exterior suspended slabs.

1. Exposure Class: ACI 318 Class F3 Class S1 Class W2 Class C2.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.

4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

J. Class K: Normal-weight concrete used for exterior retaining walls.

1. Exposure Class: ACI 318 Class F3 Class S1 Class W2 Class C2.
2. Minimum Compressive Strength: As indicated at 28 days.
3. Maximum w/cm Ratio: As indicated.
4. Slump Limit: As indicated.
5. Air Content: As indicated
6. Limit water-soluble, chloride-ion content in hardened concrete by weight of cementitious materials as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 TOLERANCES

A. Comply with ACI 117.

3.4 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining

Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install reglets to receive waterproofing and through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.5 INSTALLATION OF VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
7. Protect vapor retarder during placement of reinforcement and concrete.

    a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides and sealing to vapor retarder.

3.6 INSTALLATION OF CAST-IN-PLACE CONCRETE

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Water addition in transit or at the Project site must be in accordance with ASTM C94/C94M and must not exceed the permitted amount indicated on the concrete delivery ticket.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that

no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.
3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

    a. Do not use vibrators to transport concrete inside forms.
    b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
    c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
    d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.7 INSTALLATION OF JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.

    a. Continue reinforcement across construction joints unless otherwise indicated.

3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset

joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.
2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

3.8 APPLICATION OF FINISHING FLOORS AND SLABS

A. Scratch Finish:

1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one

direction.

3. Apply scratch finish to surfaces to receive concrete floor toppings or mortar setting beds for bonded cementitious floor finishes.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface. Use of an approved finishing aid is acceptable.
5. Do not apply troweled finish to concrete, which has a total air content greater than 3 percent.
6. Finish surfaces to the tolerances indicated on the drawings, in accordance with ASTM E1155, for a randomly trafficked floor surface:

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with a fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

3.9 APPLICATION OF FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 (ACI 301M) Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.

a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
b. Remove projections larger than 1 inch.
c. Tie holes do not require patching.

d. Surface Tolerance: ACI 117, Class D.
e. Apply to concrete surfaces for metal lap pan deck formed surfaces and those surfaces that are buried or covered with subsequent installed surfaces.

2. ACI 301 (ACI 301M) Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.

a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
b. Remove projections larger than 1/4 inch.
c. Patch tie holes.
d. Surface Tolerance: ACI 117, Class B.

e. Locations: Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

3. ACI 301 (ACI 301M) Surface Finish SF-3.0:

a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
b. Remove projections larger than 1/8 inch.
c. Patch tie holes.
d. Surface Tolerance: ACI 117 Class A.

e. Locations: Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

B. Rubbed Finish: Apply the following to as-cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:

a. Perform no later than one day after form removal.
b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the in-place concrete.
d. Maintain required patterns or variances as shown on Drawings or to match mockups.

3.10 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling in:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to match color and texture with in-place construction exposed to view.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.

    a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    b. Cast anchor-bolt insert into bases.
    c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.

1. Cast-in inserts and accessories, as shown on Drawings.
2. Screed, tamp, and trowel finish concrete surfaces.

3.11 APPLICATION OF CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 for cold weather protection during curing.

2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h, calculated in accordance with ACI 305R, before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.
4. If removing forms before end of curing period, continue curing for remainder of curing period as follows:

    a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
    b. Continuous Sprinkling: Maintain concrete surface continuously wet.
    c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
    d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:

1. Begin curing after finishing concrete.
2. Interior Concrete Floors:

    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:

        1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

            a) Lap edges and ends of absorptive cover not less than 12 inches.
            b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

        2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and

sealed by waterproof tape or adhesive.

a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
b) Cure for not less than seven days.

3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following not in cold weather:

a) Water.
b) Continuous water-fog spray.

b. Floors to Receive Polished Finish: Contractor has option of the following:

1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

a) Lap edges and ends of absorptive cover not less than 12 inches.
b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.
b) Continuous water-fog spray.

c. Floors To Receive Chemical Stain:

1) As soon as concrete has sufficient set to permit application without marring concrete surface, install curing paper over entire area of floor.
2) Install curing paper square to building lines, without wrinkles, and in a single length without end joints.
3) Butt sides of curing paper tight; do not overlap sides of curing paper.
4) Leave curing paper in place for duration of curing period, but not less than 28 days.

d. Floors To Receive Urethane Flooring:

1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place.
3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.

4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.

e. Floors To Receive Curing Compound:

1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2) Recoat areas subjected to heavy rainfall within three hours after initial application.
3) Maintain continuity of coating, and repair damage during curing period.

4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

f. Floors To Receive Curing and Sealing Compound:

1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2) Recoat areas subjected to heavy rainfall within three hours after initial application.
3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.12 INSTALLATION OF JOINT FILLING

A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.

D. Overfill joint, and trim joint filler flush with top of joint after hardening.

3.13 INSTALLATION OF CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
2. Remove and replace concrete that cannot be repaired and patched to meet specification requirements.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks in excess of 0.01 inch spalls, air bubbles exceeding surface finish limits, honeycombs, rock pockets, fins and other projections on the surface exceeding surface finish limits, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.

a. Limit cut depth to 3/4 inch.
b. Make edges of cuts perpendicular to concrete surface.
c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
d. Fill and compact with patching mortar before bonding agent has dried.
e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.

a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
b. Compact mortar in place and match surrounding surface.

3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance, as determined by Architect.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.

a. Correct low and high areas.
b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless

of width.

3. After concrete has cured at least 14 days, correct high areas by grinding.
4. Correct localized low areas during, or immediately after, completing surface-finishing operations by adding patching mortar.

    a. Finish repaired areas to blend into adjacent concrete.

5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.

    a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
    b. Feather edges to match adjacent floor elevations.

6. Correct other low areas scheduled to remain exposed with repair topping.

    a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
    b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.

    a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
    b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
    c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
    d. Place, compact, and finish to blend with adjacent finished concrete.
    e. Cure in same manner as adjacent concrete.

8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.

    a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
    b. Dampen cleaned concrete surfaces and apply bonding agent.
    c. Place patching mortar before bonding agent has dried.
    d. Compact patching mortar and finish to match adjacent concrete.
    e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency to be responsible for providing curing facility for initial curing of strength test specimens on-site and verifying that test specimens are cured in accordance with standard curing requirements in ASTM C31/C31M.
2. Testing agency to immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
3. Testing agency to report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports to include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

1) Project name.
2) Name of testing agency.
3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
4) Name of concrete manufacturer.
5) Date and time of inspection, sampling, and field testing.
6) Date and time of concrete placement.
7) Location in Work of concrete represented by samples.
8) Date and time sample was obtained.
9) Truck and batch ticket numbers.
10) Design compressive strength at 28 days.
11) Concrete mixture designation, proportions, and materials.
12) Field test results of fresh concrete, including slump or slump flow, air content, temperature and density.
13) Information on storage and curing of samples at the Project site, including curing method and maximum and minimum temperatures during initial curing period.
14) Type of fracture and compressive break strengths at seven days and 28 days.

4. Provide a space and source of power or other resources for curing and access to test specimens by the testing agency.

C. Delivery Tickets: comply with ASTM C94/C94M.

D. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M to be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing is to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143/C143M:

    a. One test at point of delivery for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests as needed.

3. Slump Flow: ASTM C1611/C1611M:

    a. One test at point of delivery for each composite sample when strength test specimens are cast, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests as needed.

4. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;

    a. One test for each composite sample when strength test specimens are cast, but not less than one test for each day's pour of each concrete mixture.

5. Concrete Temperature: ASTM C1064/C1064M:

    a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample when strength test specimens are cast.

6. Concrete Density: ASTM C138/C138M:

    a. One test for each composite sample when strength test specimens are cast.

7. Unit Weight: ASTM C138/C138M density of fresh structural lightweight concrete.

    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture. The fresh density should be consistent with that associated with the equilibrium density within a tolerance of plus or minus 4 lb/ft.3.

8. Compression Test Specimens: ASTM C31/C31M:

    a. Cast and standard cure two sets of two 6 inches by 12-inches or 4-inch by 8-inch cylindrical specimens for each composite sample.

9. Compressive-Strength Tests: ASTM C39/C39M.

    a. Test one set of four standard cured specimens at seven days and one set of two specimens at 28 days.
    b. A compressive-strength test to be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests of standard cured cylinders equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests:

    a. Testing and inspecting agency to make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
    b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.

        1) Acceptance criteria for concrete strength to be in accordance with ACI 301, Section 1.7.6.3.

13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 24 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

A. Protect concrete surfaces as follows:

1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using floor slab protective covering.

END OF SECTION 033000

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hydraulic-cement-based underlayment for use below interior floor coverings.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

C. Manufacturer Certificates: Signed by manufacturers of both underlayment and floor covering system certifying that products are compatible.

D. Qualification Data: For Installer.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of both underlayment and floor covering system certify in writing that products are compatible.

C. Mockups: Apply hydraulic-cement-based underlayment mockups to demonstrate surface finish, bonding, texture, tolerances, and standard of workmanship.

1. Apply mockups approximately 100 sq. ft. (9 sq. m) in area in location indicated or, if not indicated, as directed by Architect.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 00.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting underlayment performance.

1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F (10 and 27 deg C).

1.6 COORDINATION

A. Coordinate application of underlayment with requirements of floor covering products, including adhesives, specified in Division 09 Sections, to ensure compatibility of products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the following:

1. Ardex, Inc.; K-15 Self-Leveling Underlayment Concrete.
2. Dayton Superior Specialty Chemical Corp.; Level Layer I
3. Mapei Corporation; Ultraplan I Plus

2.2 HYDRAULIC-CEMENT-BASED UNDERLAYMENTS

A. Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thicknesses of 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations. Product shall also be capable of being poured/pumped monolithically (rather than room-by-room).

1. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
2. Compressive Strength: Not less than 4100 psi (28 MPa) at 28 days when tested according to ASTM C 109/C 109M.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer.
   a. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required

4. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).

B. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance.

1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond. Perform moisture tests recommended by manufacturer and as follows.

1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/100 sq. m) in 24 hours.
2. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have relative humidity level measurement acceptable to manufacturer.

C. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces according to manufacturer's written instructions.

D. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
4. Install perimeter isolation strip along the base of partitions prior to installation of topping. Cut isolation strip flush with finished floor.
5. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

B. Apply underlayment to produce uniform, level surface.

1. Apply a final layer without aggregate to produce surface.
2. Feather edges to match adjacent floor elevations.

C. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

D. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

E. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035416

SECTION 040100 - MASONRY MAINTENANCE

PART 1 - GENERAL

1.1 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.2 DESCRIPTION OF WORK

A. The work of this Section consists of the following:
All plant, labor, materials, equipment, testing and services necessary to complete the roof related masonry work shown on the drawings, schedules, and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Remove and restore exterior masonry where new cap flashings are being installed.

2. Prepare and repoint mortar joints if needed.

3. Install backer rod, sealant and lead T-caps in masonry coping joints.

4. Install clear water repellant on masonry that was repointed, repaired or rebuilt.

B. Related Requirements

1. Roof Carpentry - Section 061000
2. Asphalt Shingles - Section 073113
3. EPDM Roofing - Section 075323
4. Sheet Metal Flashing & Specialties - Section 076200
5. Roof Accessories - Section 077200

1.2 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

a. The Installer shall directly employ the personnel performing the work of this section.

b. The Installer shall have a supervisor in the work area when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

1. Submit the Supervisor’s resume upon request.

c. The Supervisor shall have a full-size paper set of plans & specifications with him, on the roof, at all times.

1. Work shall not occur unless the Supervisor is present with the plans & specifications.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.

b. Submit the reference list upon request.

B. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

C. Pre-construction: Attend the pre-construction meeting and discuss the following:

1. How and when the masonry work will be performed and coordinated with other work.
2. How roof & building surfaces will be protected, and how the building will be kept watertight as masonry work progresses.
3. Weather to anticipate during construction.
4. The availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.
5. A schedule for Manufacturer and Architect inspections.

1.3 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any other work on site:

1. A pre-work site and building inspection report with photos, (no videos), to document conditions before any other work starts on site.

2. Manufacturer's technical literature for all materials.

3. Test reports and certifications substantiating compliance with specification requirements, but only if requested by the Architect.

4. Samples to show sizes, grade and color, prior to mock-up erection, of each new exposed masonry material. Include the full range of colors and textures needed in the samples.

a. Bricks: four samples of solid colors, twelve samples of blended colors.
b. Mortar: four 6 inch long 1/2 inch wide strips set in metal or plastic channels.
c. Anchors: four pieces of each type of anchor.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete or incorrect submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program is not established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

a. Do not make submittals via email
b. Do not include Safety Data Sheets with the technical submittals.

2. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

C. Payment requisitions will not be processed until all submittals are received and approved.

1.5 JOB MOCK UPS

A. Prepare mock-ups of masonry work in actual job locations.

1. For brick rebuilding - provide 4 foot long mockups.
2. For repointing - provide 2 foot square mockups to show how the joints will be cut, and 2 foot square mockups to show new pointing.
3. For sealant joints - provide 2 foot long mockups to show how the joints will be prepared, and 2 foot long mockups to show new backer rod and sealant.

B. Construct each mock up with its associated roof and wall flashings, to show the following:

1. The color, size and type of each masonry unit and mortar used to set it.
2. Workmanship quality.
3. The size and spacing of weep inserts.
4. Flashings built into the masonry.
5. Related materials and their installation techniques to fully establish a quality standard for the work.

C. Mock-ups shall be constructed to establish the minimum acceptable standard of materials and workmanship, and to assure that completed work which matches the mock ups will be fully functional and serve the purpose for which it was designed.

D. Approved mock-ups may be left in place and incorporated into the permanent installation. Rejected mock-ups shall be removed and replaced until an acceptable mock up is approved.

E. Do not proceed with masonry work until mock-ups are installed, inspected and approved in writing.

1.6 DELIVERY, STORAGE AND HANDLING

A. Carefully pack, handle, and ship masonry units and accessories in suitable packs or pallets or in heavy cartons.

B. Deliver material to the site in the Manufacturer's original and unopened containers and packaging, bearing labels which identify the types and names of the products and Manufacturers. Unload and handle to prevent chipping and breakage.

C. Protect masonry materials and aggregates during storage and construction from excess wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.

D. Protect grout, mortar and cement products from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Protect liquid components from freezing.

E. Do not overload the structure when storing materials on the roof.

F. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.7 GUARANTEE

A. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: leakage, delamination, lifting, loosening, splitting, cracking, joint separation and movement.

2. Guarantee coverage shall include the repairs and modifications necessary to enable the work to perform as guaranteed.

3. Guarantee coverage shall include removing and replacing items installed as part of the original work, if removal is needed to make repairs.

B. Provide one Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee shall take effect no more than 30 days before the satisfactory completion of all punch list work.

D. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor's Guarantee.

1.8 JOB CONDITIONS

A. Perform masonry work only when the air temperature is 40 degrees F and above and will remain so until the masonry has dried, but for not less than 72 hours after work ends.

B. Erect temporary covers over pedestrian walkways and at building entrances and exits which will remain active as the work progresses.

C. Prevent mortar from staining the face of adjoining masonry and other building surfaces; immediately remove any which falls or spills. Protect sills, ledges and projections from mortar droppings.

D. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

E. Coordinate masonry removal and restoration with the installation of new flashings.

F. Prevent masonry work from rapid drying during hot weather. Use burlap to shield fresh masonry from direct sunlight, and mist fresh masonry with potable water so it cures slowly for at least 72 hours.

1. Remove and replace any new masonry that develops shrinkage cracks, or isn't bonded well to adjoining masonry.

PART 2 - PRODUCTS

1.1 GENERAL

Manufacturer's products are named to establish the basis of design quality required. Equal products supplied by other manufacturer's may be submitted for approval and used.

A. Provide the following products as specified herein:

1. MASONRY UNITS

A. Face Brick: Severe weather (SW) grade face brick and accessories, including special bricks for lintels, arches, corners, and other special conditions, to match the color, surface texture, shape and size of existing bricks.

2. MORTAR

B. General Construction Mortar:

1. Type S, custom colored, non-staining masonry cement containing Type I Portland cement meeting ASTM C150 and Type S hydrated lime meeting ASTM C207.

2. Natural or manufactured sand aggregate selected to match the size, texture, graduation and color of the existing mortar aggregate, meeting ASTM C 144.

3. Clean potable water, free of oils, acids, alkalis and organic matter.

C. Pointing Mortar:

1. Factory blended Type N masonry cement, aggregate and custom coloring agent, ready to use when mixed with clean potable water, as supplied by Spec-Mix.

D. Concrete Repair Mortar: Single component, cement mineral based, custom colored repair mortar: Jahn M90, as manufactured by Cathedral Stone Products, Inc.

3. MISCELLANEOUS MATERIALS

A Anchors: Fabricated from Type 304 stainless steel.

B Adhesive anchor: Hilti HY-270 Epoxy.

C Hilti composite sleeves for hollow masonry base.

D Sealant: High performance, solvent free, formulated and moisture curing silyl-terminated polyether sealant, ASTM C-920, Type S, Grade NS, Class 35, NovaLink construction sealant by ChemLink, color as selected.

E. Backer Rod: Closed cell polyethylene foam, non-absorbent, compressible, chemically inert rod.

F. Masonry Water Repellent: Cloudy odorless water-based penetrating liquid, UV stable, alkali resistant, translucent floural carbon emulsion, containing no volatile organic compounds: Cathedral Stone Products, Inc. R-97 Water Repellent.

G. Weep Inserts: Full height head joint inserts formed of a polypropylene honey comb, three-eighths inch thick, Hohmann & Barnard, Inc. #QV Quadro-Vent.

H. Lead T Caps: 1” wide standard extruded lead T-caps manufactured by Nuclead Manufacturing or by Weather Cap.

PART 3 - EXECUTION

3.1 INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

A. Perform masonry repointing and cleaning, and apply water repellent treatment to comply with the U.S. Department of the Interior, National Park Services Historic Preservation Briefs # 1 and # 2.

B. Carefully perform work so the structural integrity of masonry adjoining the work is preserved. Simultaneously remove only limited sections of existing masonry; support and protect masonry remaining next to and above the removal areas.

C . Completely remove and replace any existing masonry that moves, or if cracks form in the mortar joints between the masonry units, or within the masonry units.

D. Cure all mortar by misting it with potable water to maintain it in a damp condition for not less than 72 hours. Shield fresh mortar from direct sunlight with wet burlap, and prevent fresh mortar from prematurely drying during the curing period. Remove and replace mortar joints that dry pre-maturely.

E. Cut and remove existing masonry using hand and machine methods. Equip each cutting machine with a separate dedicated vacuum and manufacturer’s blade guard vacuum attachment, and control the amount of dust produced so there are no visible plumes. Comply with OSHA crystalline silica standards for construction.

F. Do not overcut brick head joints and allow the blade to nick the bricks; remove and replace bricks damaged during the cutting and repointing preparation process at no cost to the Owner.

3.2 MORTAR MIXES

A . Measurement and Mixing:

1 Measure general construction mortar materials when dry by volume using a pail or similar container. Do not measure with a shovel.

a. Mix mortar using 1 part mortar cement and 3 parts sand aggregate.
b. Thoroughly mix cement and aggregate in a clean mechanical batch mixer before adding water; then continue mixing and add only enough water to produce a workable mix.
c. Do not mix mortar by hand.

2 Mix factory blended pointing mortar in a clean mechanical batch mixer, adding only enough water to produce a workable mix.
a. Do not mix mortar by hand.

3 Use mortar within 45 minutes of final mixing; do not re-temper or use partially hardened material.

B. Mix and install mortar with the same ingredients used to produce the approved mock-up. Do not adjust the color or proportions without written approval. Do not use admixtures of any kind in the mortar unless specifically approved.

3.3 BRICK REMOVAL AND REPLACEMENT

1. Simultaneously remove only limited sections of existing brick masonry; support and protect masonry remaining next to and above the removal areas.

2. Carefully remove bricks on a piece-by-piece basis. Cut out full units from joint to joint and to permit replacement with full size units. Clean the edges of the remaining bricks, to remove all mortar, dust, and loose debris in preparation for rebuilding.

3. Install new cap flashings and wall flashing extensions, properly lapped under and connected to the existing wall flashings, as indicated on the drawings and specified elsewhere, before installing new bricks. Install the flashings so a full wythe of new brick will fit flush with the existing wall surface.

4. Wet bricks which have initial rates of absorption (suction) greater than 30 grams per 30 square inches per minute, (in accordance with ASTM C 67), to ensure the bricks are nearly saturated with water, but surface dry when laid.

5. Fit and install new bricks to match the original bond and course pattern. Use a motor driven diamond blade wet saw to cut bricks with clean, sharp unchipped edges.

6. Lay replacement bricks with completely filled bed, head and collar joints. Butter the ends with sufficient mortar to fill the head joints and shove the bricks into place.

7. Install new bricks with mortar joints to match the width of the adjoining brick joints. Tool the new joints to match existing joints in surrounding brickwork.

8. Do not cut off the backs of the new bricks if a full wythe of brick doesn't fit. Notify the Architect and obtain his direction before proceeding further.

3.4 MASONRY PARAPET COPINGS.

1. Install through wall flashings and dowels. Secure each stone to roof parapet with dowels as indicated on the drawings.

2. Set masonry coping in a full bed of mortar.

3. Create approximately 3/8 inch wide, equal and uniform cross joints between all precast sections. Install backer rod and sealant in the joints, covered with lead T-caps.

3.5 REPOINTING EXISTING MASONRY

A Joint Preparation:

1 Remove existing mortar and foreign material from the mortar joints to a minimum depth of 1 inch, and deeper where needed to expose sound unweathered mortar.

2 Remove mortar from the sides of the joints to provide joints with square backs and to expose the masonry for contact with the pointing mortar. Brush or vacuum the joints to remove dirt and loose debris.

3 Remove mortar and other foreign material from the surface of masonry adjacent to the joint.

4 Do not spall the edges of adjacent masonry or widen the joints. Replace any masonry which is damaged.

B Joint Pointing:

5 Rinse the joint surfaces with water to remove dust and mortar particles just prior to repointing. Time the rinse, so when repointing occurs, excess water has evaporated and the existing masonry is damp but free of standing water.

6 Apply pointing mortar in 1/2 inch thick layers, and thoroughly compact each layer before adding the next layer, to completely fill each joint.

7 Slightly recess pointing mortar from the face of the adjacent masonry units. Do not spread mortar on the edges or faces of the masonry. Do not feather edge the mortar.

8 Tool repointed joints when the mortar is thumbprint hard. Remove excess mortar from the edges of the joints with a soft bristle brush.

C Cleaning:

9 Immediately after the mortar has fully hardened, thoroughly clean masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water.

10 Do not use metal scrapers or brushes. Do not use acid or alkali cleaning agents. Do not pressure-wash the masonry or new pointing mortar.

3.6 WATER REPELLENT

1. Prepare and clean masonry surfaces to receive water repellent utilizing hand, chemical and pressure water methods as needed to remove all dirt, dust, efflorescence, mold, salt, grease, oil, asphalt, laitance, paint and other foreign materials.

2. Allow the masonry surfaces to dry for a minimum of 48 hours at a temperature above 50° F.

3. Mask and protect adjoining surfaces i.e., the roof, flashings, windows, side walls and site plantings from over spray.

4. Apply two coats of water repellent using a low pressure (15-20 psi maximum) wet fan type nozzle or 1 inch nap roller in a “flooding” application, to thoroughly saturate the masonry, starting at the bottom so the material runs 6 to 8 inches below the points of application. Apply the second coat of water repellent about 10 minutes after the first coat, and as soon as the first coat has soaked into the masonry, but before the first coat dries.

3.7 CLEANING, PROTECTION AND WATERTIGHTNESS

1. Inspect the interior and exterior of the building and grounds, and submit a written report with photos, no videos, to document any pre-existing leakage or damage, prior to performing any work.

2. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that were not documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

3. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding

landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

4. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

5. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

6. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION 040100

SECTION 040120 - MASONRY RESTORATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

A. Extent of masonry restoration work is indicated in drawings.

B. Masonry restoration work includes the following:

1. Removing and rebuilding damaged masonry.
2. Repointing mortar joints.
3. Masonry patching.
4. Crack repairs.
5. Sealing joints between coping stones.
6. Repairing and painting lintels.
7. Progress cleaning of masonry surfaces.

C. Section 047210 - Architectural Cast Stone Replacement

D. Section 049300 - Masonry Restoration Cleaning

1.3 QUALITY ASSURANCE

A. Reference Standards:

1. TMS 602 - Specification for Masonry Structures
2. ASTM 67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
3. ASTM C144 – Standard Specification for Aggregate for Masonry Mortar.
4. ASTM C150 – Standard Specification for Portland Cement.
5. ASTM C207 – Standard Specification for Hydrated Lime for Masonry Purposes.
6. ASTM C216 – Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
7. ASTM C270 – Standard Specification for Mortar for Unit Masonry.
8. ASTM A276 – Standard Specification for Stainless Steel Bars and Shapes.
9. ASTM C780 – Standard Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
10. ASTM C1242 – Standard Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems.
11. ASTM C1324 – Standard Test Method for Examination and Analysis of Hardened Masonry Mortar.

B. Comply with the latest editions of the following reference standards:

1. National Park Service (NPS), “National Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.”
2. National Park Service (NPS) TPS Brief 1, “Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings.”
3. National Park Service (NPS) TPS Brief 2, “Repointing Mortar Joints in Historic Masonry Buildings.”

C. Masonry Specialist: Work shall be performed by a firm with minimum 5 years successful experience in comparable masonry restoration projects and employing skilled personnel in restoration processes and operations indicated.

D. Field Supervision: Retain an experienced full-time supervisor on the project site at all times when masonry restoration is in progress. A single individual shall have experience with similar work and be responsible for supervising masonry restoration work throughout the duration of project.

E. Mortar Sampling and Trial Mix Testing: Prior to beginning Work, sample existing mortar and prepare trial mortar mixes. Allow for a minimum of one month to sample and prepare trial mixes, test mixes for color match, and make necessary revisions.

1. Remove four samples, approximately 4 inches long, of each type of mortar to be matched with a hand chisel at locations selected by Engineer. Set aside one sample for trial mix comparison.
2. Provide temporary, removable materials at locations from which samples were taken.
3. Test existing mortar according to ASTM C1324, modified as agreed by testing service and Engineer for Project requirements, to determine proportional composition of original ingredients, sizes and colors of aggregates, and approximate strength. Use x-ray diffraction, infrared spectroscopy, and differential thermal analysis to supplement microscopical methods.
4. Match all components to closest extent possible, including existing aggregate material type, size, grading, and color.
5. Develop trial mixes and test until mortar meets criteria in these specifications.
6. Contractor shall take samples and pay for all testing prior to Engineer accepting mortar mix. Owner shall pay for testing after mortar mix is accepted; however, if test results are unacceptable, Contractor shall be responsible for associated costs of additional testing, engineering, and corrective work.

F. Field-Constructed Mock-Ups: Prior to beginning masonry restoration, prepare test samples on existing building to further verify selections made under sample submittals and demonstrate aesthetic effects and qualities of materials and execution. Sample areas to be selected by Engineer and will be close to grade when possible to allow observations by Engineer and Architect. Do not proceed

further with work of this section until test sample has been approved by Engineer and Architect. Approved test samples will be used as quality standards for remaining work. Use materials indicated for work:

1. Repointing: A 3-foot by 3-foot sample area demonstrating raking out of joints and repointing. Locate sample adjacent to existing, cleaned mortar. Clean existing adjacent surface and allow to dry prior to mockup review. Cure mortar per methods outlined in Part 3.
2. Sealants: Approximately 2 linear feet of sealant.
3. Cast Stone Installation Mock-up: that demonstrates the following:
   a. Cast stone units to verify color and texture match to existing.
   b. Installation of flashing.
   c. Installation of stone anchors

G. Source of Materials: Obtain materials for masonry restoration from single source for each type of material required (face brick, cast stone, cement, sand, etc.) to ensure match of quality, color pattern, and texture.

1.4 SUBMITTALS

A. Qualifications:

1. Submit descriptions of projects completed within the last ten years of similar scope and cost. Include project location and reference contact information.
2. Submit project experience similar to work scope for field supervisor responsible for work to be performed under this section, including a minimum of five years' experience for similar repair scope.

B. Product Data: Submit manufacturer's technical data for each product indicated, including recommendations for its application and installation instructions. Include test reports and certifications substantiating product complies with requirements.

C. Restoration Program: Submit written program for each phase of restoration process, including protection of surrounding materials on building and site during operations. Describe in detail materials, methods, and equipment to be used for each phase of restoration and reconstruction work.

D. Samples For Initial Selection: Submit for verification prior to construction:

1. Face brick: For preliminary selection, provide sample boards of brick blends to be reviewed at the site against the existing brick. After preliminary selection, submit six units of brick for verification of color, texture and size.
2. Mortar: For preliminary selection of Colored Mortar: Submit sets of mortar that will be left exposed in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.
   a. Have each set contain a close color range of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.

b. Submit with precise measurements on ingredients, proportions, gradations, and sources of colored sands from which each Sample was made.

3. Mortar: For each trial mix, showing color, texture, profile and finish.
   a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.
   b. Clean adjacent existing surface to be matched prior to review. Coordinate with cleaning mockup.
4. Sealant: Color samples from all specified manufacturers to display range of available color options where sealant will be exposed.

E. Shop Drawings: Submit detailed drawings for cast stone and anchors.

1. Submit detailed drawings for replacement cast stone units.
   a. Assign a unique number to each unit being replaced or removed and reinstalled.
   b. Shop drawings to include anchor type and location for each unit.
   c. Provide plans, elevations, and section drawings.
   d. Submit photographic documentation of each stone scheduled for replacement prior to removal for verification of match. Document location of existing stone anchorage (at replacement location and adjacent stones to remain) identified during removals.
   e. Note where adjacent units will be removed and reinstalled to accommodate replacements. Include anchorage for units to be reinstalled.

1.5 DELIVERY, STORAGE AND HANDLING

A. Carefully pack, handle, and ship masonry units and accessories strapped together in suitable packs or pallets or heavy cartons. Carefully unload and handle to prevent chipping and breakage.

B. Deliver other materials to site in manufacturer’s original, unopened containers and packaging, bearing labels as to types and names of products and manufacturers.

C. Protect masonry materials during storage and construction from wetting by rain, snow, or ground water and from staining or intermixture with earth or other types of materials.

D. Protect mortar and other materials from deterioration by moisture and temperature. Store in dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer’s recommendations for minimum and maximum temperature requirements for storage.

E. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two

days.

F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.6 PROJECT CONDITIONS

A. Only clean masonry surfaces when air temperature is 40 degrees F (4 degrees C) or above and will remain so until masonry has dried out. Temperature must remain above 40 degrees F (4 degrees C) for minimum seven days after completing cleaning.

B. Unless temporary protection is provided, do not repoint mortar joints, rebuild masonry, or repair masonry unless air temperature is between 40 degrees F (4 degrees C) and 90 degrees F (32 degrees C) and will remain so for at least 48 hours after completion of work.

1. If temperature exceeds 90 degrees F (32 degrees C), comply with Hot-Weather Masonry Construction Requirements in the drawings.
2. If temperature falls below 40 degrees F (4 degrees C), follow Cold-Weather Masonry Construction Requirements in the drawings.

C. Prevent mortar used in repointing and repair work from staining face of surrounding masonry or other surfaces. Immediately remove mortar in contact with exposed masonry or other surfaces.

D. Protect sills, ledges, and projections from mortar droppings.

PART 2 – PRODUCTS

2.1 MASONRY MATERIALS

A. Face Brick: Provide units with color texture, and size to match existing. Units shall comply with ASTM C216, Grade SW. Do not reuse existing brick unless noted otherwise.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I or II, white or gray or both where required for color matching mortar. Type III may be used for cold-weather construction.

1. If required, provide non-staining white cement complying with staining requirements of ASTM C91 and containing not more than 0.30 percent alkali equivalent or more than 0.50 percent by weight ferric oxide to produce acceptable color and texture to match existing.
2. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate for Mortar: ASTM C144 unless otherwise indicated.

1. For pointing mortar, provide sand with rounded edges.
2. Match size, texture, and gradation of aggregate in existing mortar as closely as possible.

D. Mortar Pigments: ASTM C979/C979M, compounded for use in mortar mixes, and having a record of satisfactory performance in masonry mortars.

E. Water: Clean, free of oils, acids, alkalis, and organic matter. ASTM C270, potable.

F. Admixtures: Do not use unless proposed, tested, and accepted prior to beginning work.

2.3 PROGRESS CLEANING MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.

B. Brushes: Stiff mylar or fiber bristle only.

C. Acidic, Alkali, and Detergent Cleaning Agents: Do not use unless proposed, tested, and accepted in Preconstruction Testing Phase prior to beginning work.

2.4 CAST STONE PATCHING MATERIALS

A. General: Use formulation that is vapor permeable.

B. Limestone/Calcareous Cast Stone Patching Material: “Custom System 45, Grade LC”, by Edison Coatings, Inc.; “Jahn M70”, by Cathedral Stone Products Inc.; “Tenon Conproco Matrix”, by TCC Materials.; or accepted equivalent. Custom match color of existing masonry.

2.5 MISCELLANEOUS MATERIALS

A. Cast Stone Anchors: ASTM A 276, Type 304, stainless steel anchors.

1. Spring-Loaded Dowel: Stainless steel, “Spring-Loaded Dowel #355” by Heckmann Building Products, Inc.; “Spring Loaded Dowel”, by Masonpro, Inc.; or accepted equivalent.
2. Stainless Steel Pin: 3/8-inch-diameter round stock, stainless steel rod, Type 316
3. Threaded Eye Bolt: ASTM F593, Type 304 stainless steel threaded rod installed into predrilled hole with chemical adhesive

B. Deformed Reinforcing Bars: Billet steel complying with ASTM A615, Grade 60.

C. Anti-Corrosive Primer (for use on tightly bonded rust): “Rust Destroyer” by

Advanced Protective Products, Inc.; “Rust Reformer” by Rustoleum or accepted equivalent.

D. Lintel Paint: Polyamide epoxy coating for use on marginally prepared steel surfaces.

1. Intermediate Coat: “Series 27 F.C. Typoxy” by Tnemec; “Macropoxy HS Epoxy,” by Sherwin-Williams; or accepted equivalent.
2. Finish Coat: “Series 27 F.C. Typoxy” by Tnemec; “Macropoxy HS Epoxy,” by Sherwin-Williams; or accepted equivalent. Color as selected by Architect.

E. Joint Sealer Materials:

1. Sealant: One-part, neutral curing silicone sealant “795 Silicone Building Sealant” by Dow Corning, “SCS2000 Silpruf” by Momentive or accepted equivalent. Color as selected by Architect. Color of exposed sealant to match color of mortar adjoining installed sealant, unless otherwise indicated.
2. Backer Rods: ASTM C1330, Closed-cell material with a surface skin of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance by Dow Chemical or accepted equivalent.
3. Bonder Breaker Tape: Polyethylene tape or other plastic tape as recommended in writing by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
4. Joint Cleaner: As recommended by sealant manufacturer.
5. Joint Primer/Sealer: As recommended by sealant manufacturer.

F. Chemical Adhesive (Adhesive Grout):

1. Anchoring to hollow masonry (brick or hollow CMU), grouted CMU, solid brick, or stone:
   a. Anchors for use when base material temperature is 0°F or greater: “Epcon A7” by ITW Ramset/Red Head; “AC 100 Plus” by Powers Fasteners; “AT Acrylic-Tie” by Simpson/Strong Tie; or accepted equivalent.
   b. Anchors for use when base material temperature is 40°F or greater: “HIT-HY 270” by Hilti; “Epcon C6” by ITW Ramset/Red Head; “ET-HP” by Simpson/Strong-Tie; or accepted equivalent.
   c. Provide manufacturer’s standard screen tubes for use with anchors.

G. Stone Patch Repair Pin: 1/8-inch-diamter round stock, stainless steel threaded rod, Type 316.

H. Metal Flashing Materials:

1. All sheets shall carry markings of producer, temper, and weight.

2. Stainless Steel: 18-8 stainless steel AISI Type 304, 2D finish, 24 gauge, except cleats and hook strips use 22 gauge, 2B finish.

I. Metal Flashing Accessories:

1. Solder: ASTM B32, Class50A or 50B, bar form, 50% block tin and 50% pig lead, with an approved brand of inorganic acid based soldering flux for stainless steel.
2. Rivets for Stainless Steel Flashing Connections: Solid stainless steel 3/16 inch diameter flat-head rivets of proper length for the material being fastened. Pop rivets are prohibited.
3. Fasteners and Accessories for Stainless Steel: Use stainless steel screws, bolts, washers, and nails as required. Nails shall be 12 ga with minimum ¼ inch diameter flat head, annular threaded, with needlepoint, and of sufficient length to obtain 1¼ inch embedment into blocking, and for full depth of plywood.
4. Anchors for Attaching Metal Flashing to Masonry: ¼ inch diameter Nylon-Nailin with stainless steel drive pin by Rawlplug Inc., or approved equal. Provide lengths to obtain 1½ inch penetration minimum into masonry backup. Install into solid masonry with minimum of 3 inch edge distance, unless noted otherwise on Drawings.

PART 3 – EXECUTION

3.1 MASONRY REPOINTING, GENERAL

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

B. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 15 feet away by Engineer.

3.2 MORTAR MIXES

A. General:

1. Measurement and Mixing: Measure cementitious and aggregate material in dry conditions by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in clean mechanical batch mixer.
2. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form

when pressed into a ball. Maintain mortar in this dampened condition for 1 to 2 hours. Add remaining water in small portions until desired consistency is reached. Use mortar within 30 minutes of final mixing. Do not retemper or use partially hardened material.

B. Colored Mortar: Produce mortar of color required by use of selected ingredients. Do not adjust proportions without Engineer's acceptance.

C. Do not use admixtures in mortar unless proposed, tested, and accepted prior to beginning work.

D. Mortar Proportions: Portland Cement-lime mix as follows (adjust per mortar analysis results for compatible mix):

1. Pointing Mortar, ASTM C270: One part Portland cement, one part lime, and six parts mortar aggregate.
2. Rebuilding Mortar: One part Portland cement, one part lime, and six parts mortar aggregate.

3.3 REPOINTING

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.
2. Joints at locations of the following defects:
   a. Holes and missing mortar.
   b. Cracks that can be penetrated ¼ inch or more by a knife blade 0.027 inch thick.
   c. Cracks 1/16 inch or more in width and of any depth.
   d. Hollow-sounding joints when tapped by metal object.
   e. Eroded surfaces ¼ inch or more deep.
   f. Deterioration to point that mortar can be easily removed by hand, without tools.
   g. Joints filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of 2-1/2 times joint width and not less than that required to expose sound, unweathered mortar (or as noted on Drawings for deep repointing). Do not remove unsound mortar more than 2 inches deep, unless otherwise noted; consult Engineer for direction.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of bricks or widen joints. Replace damaged bricks as directed by Engineer.

a. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar in bed joints and mortar in head joints by hand with chisel and resilient mallet.

D. Notify Engineer of unforeseen detrimental conditions, including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before painting.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow it to become thumbprint hard before applying next layer. Where existing brick have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing. Tool exposed mortar joints in repaired areas to match joints of surrounding existing masonry.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
   a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
   b. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Remove mortar and repoint.

F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.4 BRICK AND CAST STONE REMOVAL AND REBUILDING

A. Removals:

1. Carefully remove bricks and cast stone in sections as indicated in drawings. Cut out full brick and trim units from joint to joint in manner to permit

replacement with full-sized units.

2. Support and protect masonry indicated to remain that surrounds removal area.
3. If adjacent stones are to be removed and reinstalled to perform repair work, consult Engineer for required anchoring for reinstallation.
4. Clean remaining edges of removal areas by removing mortar, dust, and loose debris in preparation for rebuilding.

B. Sounding:

1. Use a lightweight hammer to sound masonry surfaces around repair areas.
2. Remove loose material and notify Engineer of deterioration not included in the Contract Documents.

C. Brick Rebuilding:

1. Repoint exposed backup masonry prior to rebuilding brick veneer. Replace loose and deteriorated masonry units as required to provide solid back-up surface.
2. For multi wythe composite brick masonry walls, match existing headered construction.
3. Install new brick to replace removed brick. Fit replacement units into bonding and coursing pattern of existing brick. If cutting is required, use motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
4. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet clay brick that have ASTM C67 initial rates of absorption (suction) of more than 30 grams per square inch per minute. Use wetting methods that ensure units are nearly saturated but surface dry when laid. Maintain joint width for replacement units to match existing.
5. Tool exposed mortar joints in repaired areas to match joints of surrounding existing masonry.
6. Repoint new mortar joints in repaired area to comply with requirements for repointing existing masonry.
7. Cleanup as work proceeds. Avoid spillage onto existing building.

D. Cast Stone Rebuilding:

1. Repoint exposed backup masonry prior to rebuilding. Replace loose and deteriorated masonry units as required to provide solid back-up surface.
2. Installing contractor shall check units for fit and finish prior to installation. Unacceptable units shall not be set. Check location and condition of required bearing surfaces. Do not begin installation until unacceptable conditions have been corrected.
3. Thoroughly clean surfaces of adjoining construction of loose and foreign matter.
4. Stone shall be set with bed joints fully mortared and non-corrosive setting buttons at approximately quarter points (2/stone). Head joints to be fully

mortared and raked back to receive backer rod and sealant.

a. If hardwood shims are used, soak a minimum of 48 hours. Set full bed of mortar flush with top of shims. Extend shims past face of stone to allow for removal, remove shims as soon as mortar can support the weight of the stone (12-24 hours), and mortar holes solid. Coordinate shim locations with stone anchor locations. Align shims vertically where possible.

5. Attach masonry with anchors as noted in Drawings. Fill dowel holes completely with mortar.
6. Do not use pry bars or other equipment in a manner that could damage units.
7. Cast Stone Setting
   a. Tolerances
      i. Comply with Section 8 of TMS 604.
      ii. Set stones 1/8 in. or less, within the plane of adjacent units.
      iii. Joint size:
         1. At stone/brick joints 3/8 in.
         2. At stone/stone joints in vertical position 1/4 in. (3/8 in. optional).
         3. Stone/stone joints exposed on top 3/8 in.
   b. Drench units with clean water prior to setting.
   c. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
   d. Rake mortar joints 3/4 in. in for pointing.
   e. Remove excess mortar from unit faces immediately after setting.
   f. Tuck point unit joints to a slight concave profile. If existing adjacent joint profile is different, consult Engineer for direction
8. Clean up as work proceeds. Avoid spillage onto existing building.

3.5 BACKUP MASONRY REMOVAL AND REPLACEMENT

A. Where backup masonry is fractured or unstable and at locations indicated, remove mortar and masonry units that are broken or deteriorated, and rebuild with whole, new brick backup masonry units. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

B. Support and protect remaining masonry that surrounds removal area.

C. Maintain flashing, reinforcement, anchors, lintels, and adjoining construction in an undamaged condition.

D. Notify Engineer of unforeseen detrimental conditions, including voids, cracks, bulges, loose masonry units beyond the removal area, rotted wood, rusted metal, and other deteriorated items.

E. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.

F. Replace removed damaged brick with new building brick matching existing backup brick. Do not use broken units unless they can be cut to usable size.

G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

H. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. Use wetting methods that ensure that units are nearly saturated, but surface is dry when laid.

3.6 CAST STONE REANCHORING

A. Drill cast stone as required for specified anchors and install masonry using anchors noted on Drawings.

3.7 EXISTING CAST STONE PATCHING

A. Remove loose, weakened, or damaged masonry in areas indicated. Sound the remaining masonry substrate with a hammer to verify its integrity. Loose mortar, laitance, spalled, cracked, and/or debonded masonry shall be removed with hand tools unless otherwise indicated.

B. Prepare surfaces as recommended by patch material manufacturer. Carefully remove additional material so patch does not have feathered edges but has square or slightly undercut edges on area to be patched and is at least 1/4 inch thick, but not less than as recommended by manufacturer. Clean surfaces of dust, debris, sealant residue, and other contaminants.

C. Follow manufacturer’s instructions for placement of patch material.

D. Patches to incorporate stainless steel threaded rod pins, as shown in Drawings. Provide at least one stone repair pin per 4-inch square of repair surface area to ensure that patch is tied to the existing masonry. Drill holes for anchors with a diameter of 1/8 inch larger than anchor diameter. Drill holes with a minimum depth of 4 inches, unless noted otherwise. Set anchors back from face of masonry a minimum of 1 inch.

E. Match patching material finish, color, texture, and surface detail with exposed surfaces of existing masonry. Finishing and texturing shall conceal bond lines between repaired area and adjacent surfaces. Texturing shall provide replication of all surface details, including tooling and machine marks.

F. Cure by misting with water 2 to 3 times per day or use burlene as recommended by manufacturer. Do not use curing agents or allow polyethylene or burlap to touch surface of repair.

3.8 REPLACEMENT CAST STONE REPAIR AND CLEANING

A. Repair chips with touchup materials furnished by manufacturer. Patch and refinish minor damage to match adjacent surfaces. Cure patches.

B. Remove excess sealant and mortar and droppings immediately after soiling.

C. After completion of installation and other activities liable to soil the cast stone units, clean exposed surfaces of the units with soap powder in clean water applied by scrubbing with stiff fiber brushes. If recommended by the cast stone unit manufacturer, a cleaning solution which will not be harmful to the units or the joints may be used in lieu of soap and water. Immediately after cleaning, thoroughly rinse units with clean water.

D. Saturate units to be cleaned prior to applying an approved masonry cleaner.

E. Consult with manufacturer for appropriate cleaners.

3.9 LINTEL REPAIRS

A. Remove loose rust and coat steel in contact with masonry that is exposed by masonry removals. If on inspection and rust removal, the thickness of a steel member is found to be reduced from rust by more than 1/16 inch, notify Engineer before proceeding.

1. Surface Preparation: Remove paint, rust, and other contaminants according to [SSPC-SP 2, “Hand Tool Cleaning,”] [SSPC-SP 3, “Power Tool Cleaning,” as applicable to comply with paint manufacturer’s recommended preparation.
2. Antitrust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer’s written instructions and without exceeding manufacturer’s recommended rate of application (dry film thickness per coat).

B. Clean and finish paint steel that is to be left exposed.

3.10 CLEANING MASONRY

A. Progress Cleaning:

1. Each day, clean work surfaces to remove excess mortar and foreign matter on exposed masonry surfaces.

B. Final Cleaning

1. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water sprayed at low pressure (Pressure: 100-400 psi,

Flow Rate: 4 to 6 gpm).

a. Do not use metal scrapers or brushes.
b. Use of acid or alkali cleaning agents shall not be permitted unless proposed, tested, and accepted in Preconstruction Testing Phase prior to beginning cleaning.
c. See Section 049300 for Masonry Restoration Cleaning.

END OF SECTION 040120

SECTION 042000 – UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:

1. Concrete masonry units. (CMU)
2. Face brick.
3. Terra cotta
4. Mortar and grout.
5. Reinforcing steel.
6. Masonry joint reinforcement.
7. Ties and anchors.
8. Miscellaneous masonry accessories.
9. Prefabricated masonry lintels.
10. Embedded flashing.
11. Cavity-wall insulation.

B. Products furnished, but not installed, under this Section include the following:

1. Anchor sections of adjustable masonry anchors for connecting to cast-in-place concrete, installed under Division 03 Section "Cast-in-Place Concrete."
2. Mortar and grout for stone veneer installed under Division 04 Section “Stone Masonry Veneer”.
3. Mortar and grout for cast stone trim installed under Division 04 Section “Cast Stone”.
4. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 05 Section "Structural Steel Framing."

C. Products installed, but not furnished, under this Section include the following:

1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Metal Fabrications."
2. Manufactured reglets in masonry joints for metal flashing, furnished under Division 07 Section "Sheet Metal Flashing and Trim."
3. Hollow-metal frames in unit masonry openings, furnished under Division 08 Section "Hollow Metal Doors and Frames."

1.2 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops net-area compressive strengths (f'_m) at 28 days as indicated in unit masonry performance requirements on the Structural Drawings.

1.4 ACTION SUBMITTALS

A. Product Data: For each different masonry unit, mortar material, accessory, and other manufactured product specified.

B. Shop Drawings: Show fabrication and installation details for the following:

1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
2. Include each different shape to be provided for terracotta units.
3. Provide a shop drawing of the mock-up, including plans, elevations, sections, and locations of brick and terra cotta units on the structure and their connection to the back-up structure.

C. Samples for Initial Selection: For the following:

1. Colored mortar samples in small-scale form showing the full range of colors and textures available for each different exposed mortar color required.
2. Terra cotta in small-scale form showing the full range of colors and textures available for each different exposed terra cotta unit required

D. Samples for Verification: For the following:

1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.
2. Full-size terra cotta units. Provide sets for each color and texture of terra cotta required. Include 2 or more samples in each set showing the full range of variations expected in these characteristics
3. Colored mortar samples, for each mortar color required, showing the full range expected in the finished construction. Make samples using the same sand and mortar ingredients to be used on Project. Label samples to indicate type and amount of colorant used
4. Weep holes/vents in color to match mortar color
5. Accessories embedded in the masonry.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:

1. Each type of masonry unit required. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.
2. Mortar complying with property requirements of ASTM C 270.
3. Grout mixes complying with compressive strength requirements of ASTM C 476. Include description of type and proportions of grout ingredients.

C. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Each type of masonry unit required.
   a. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.

2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
3. Each type and size of joint reinforcement.
4. Each type and size of anchor, tie, and metal accessory.

1.6 QUALITY ASSURANCE

A. Masonry Standard: Comply with requirements of "Specifications for Masonry Structures, ACI 530.1/ASCE 6/TSM 602" published by the American Concrete Institute, except when more stringent requirements are specified and as modified by the requirements of these Contract Documents.

1. Revise ACI 530.1/ASCE 6/TSM 602 to exclude Article 1.5; Subparagraphs 1.1 C.1 through 4, and Subparagraphs 3.3 E.1 through 5.

B. Installer Qualifications, CMU: Engage an experienced installer who has 10 years experience as a journeymen mason, and who has completed masonry similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1. A minimum of one skilled journeyman mason shall be present at all times during masonry erection and shall personally direct the work.

C. Installer Qualifications, Terra Cotta, Brick and Cast Stone: Work must be performed by a firm having not less than five (5) years successful experience in comparable masonry work including work on at least three (3) buildings, either new buildings or historic buildings listed in the National Register of Historic Places, in the last five years and employing personnel skilled in the installation processes and operations indicated.

1. Only skilled journeymen masons who are thoroughly trained and experienced in performing historic masonry work and installing brick, terra cotta and cast stone units using traditional methods, and completely familiar with the materials and methods required shall be used for the work.
2. One skilled journeyman mason shall be present at all times during execution of the work and shall personally direct the work.
3. In acceptance or rejection of brick, terra cotta and cast stone masonry work, no allowance will be made for lack of skill on the part of the workmen

D. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548.

E. Source Limitations for Concrete Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

F. Source Limitations for Brick: Obtain all brick from single source with resources to provide materials of consistent quality in appearance and physical properties without delaying the work

G. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

H. Source Limitations for Terra Cotta: Obtain all terra cotta from single source with resources to provide materials of consistent quality in appearance and physical properties without delaying the work.

I. Single Source Responsibility for Installation of Masonry Work: All brick and terra cotta work of this section and cast stone work of Section 047200 shall be performed by a single firm meeting qualifications specified in this section.

J. Terra Cotta Manufacturer Qualifications: Company specializing in the manufacture of architectural terra cotta materials with a minimum of 10 years experience.

K. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

L. Mockups: Before installing brick and terra cotta masonry and cast stone, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Final approval of brick and terra cotta bonding pattern, cast stone, brick and terra cotta color and texture and mortar color and texture will be made based on acceptance of mock-up. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

1. Locate mockup in the location and of the size as indicated on Drawings.
2. Build mockups containing brick, terra cotta and cast stone in typical full wall thickness, including face and backup wythes and accessories. Include a sealant-filled joint at least 16 inches long in the mockup.
    a. Typical exterior masonry-veneer wall complete with back-up, reinforcing/ties, insulation, flashing, and weep holes. Demonstrate all types of brick patterns and terra cotta patterns to be used in the Work in the mock-up. Include cast stone trim units in the mock-up.
    b. Mock-up shall demonstrate match to existing cast stone work, terra cotta work and brickwork.

3. Re-prepare mock-ups as required to obtain Architect’s approval.
4. Remove and reconstruct mockups as required to obtain Architect’s approval.

5. Protect accepted mockups from the elements with weather-resistant membrane.
6. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

M. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Coordination."

N. Reference Standards: Comply with Brick Institute of America (BIA) and Masonry Institute of America (MIA) handbooks/Manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store and handle masonry and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, or other causes.

C. Keep terra cotta units in their storage containers until ready for installation. Protect units from the weather to prevent staining.

D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

E. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three (3) days after building masonry walls or columns

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in Part 1.8 C. of ACI 530.1/ASCE 6/TMS 602.

1. Do not lay masonry units that are wet or frozen.
2. Remove masonry damaged by freezing conditions.

E. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

F. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Comply with cold-weather construction requirements contained in Part 1.8 D. of ACI 530.1/ASCE 6/TMS 602. Provide artificial shade and wind breaks and use cooled materials as required.

1. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with a wind velocity greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

1.9 SPECIAL INSPECTIONS

A. The Owner will engage the services of a qualified Special Inspector for this project. The Special Inspector will provide and/or coordinate inspection and testing requirements as necessary in accordance with the provisions of the Statement of Special Inspections Form contained in these Specifications.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. General: Provide shapes indicated and as follows:

1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
2. Provide bullnose units for outside corners that are exposed to view, unless otherwise indicated.

B. Concrete Masonry Units (CMU): ASTM C 90 with minimum average net-area compressive strength of 1900 psi; lightweight; and as follows:

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1. Size: Manufactured to the following dimensions: 16 inches (407 mm) by 8 inches (203 mm) nominal; 7-5/8 inches (194 mm) by 15-5/8 inches (397 mm) actual; by thickness indicated.
2. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.
3. Provide U.L. classified units for rated walls, or units meeting the fire resistance ratings by equivalent concrete masonry thickness.

2.2 BRICK

A. General: Provide shapes indicated and as follows for each form of brick required:

1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
2. Provide lipped brick at steel relieving angles as indicated on drawings.

B. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

1. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

C. Face Brick: ASTM C 216, Grade SW, Type FBS, and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
2. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
4. Type: Molded.
5. Finish: Sand finish
6. Size: Modular; 3-5/8" w x 2-1/4" h x 7-5/8" l
7. Basis of Design Products: Provide the following bricks from the Cushwa Series, manufactured by Glen-Gery.
   a. 50DD (black)
   b. 51DDX (Maroon)
   c. 53DD (red)

8. Brick Blends:
   a. Flemish Bond Stretchers: 85% 53DD and 15% 51DDX
   b. Flemish Bond Headers: 50% 50DD, 25% 53DD and 25% 51DDX

2.3 TERRA COTTA

A. Manufacturers:

1. Boston Valley Terra Cotta.
2. Gladding, McBean Co.
3. Darwen Terracotta Limited.

B. Process: Provide units manufactured only by the hand pressed or ram pressed of forming.

C. Finish: Finish faces, exposed when in place, shall be free from chips, blisters, crawling, or other imperfections which, as judged by the Project Architect, detract from the appearance of the finished work when viewed from a distance of 15 feet.

D. Defects: Units with cracks, spalls, or show evidence of being patched will not be accepted.

E. Match color, shape, finish and texture of existing terra cotta units.

F. Field measure existing units and produce molds from existing units to replicate work. Based on these, create shop drawings. Allow for clay shrinkage resulting from drying and firing. Joint widths are to be 1/4" minimum if existing is less than 1/4" and 3/8" maximum if joints are equal to or greater than 3/8". If existing units are damaged and details are missing, recreate missing details in the pieces or if units are missing, create new design based on similar adjacent pieces or existing photographs.

G. Fabricate terra cotta pieces in accordance with approved shop and setting drawings.

H. Dry pieces 3 to 14 days using regulated temperature and humidity.

I. Glaze of units shall not overlap edges to provide full bonding of mortar to the sides.

J. Provide weeps in cells that will not be filled with mortar.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color cement.

1. For concrete block work, provide natural color cement.
2. For stone, cast stone, terra cotta and brickwork, provide natural color or white cement as required to produce required mortar colors.

B. Hydrated Lime: ASTM C 207, Type S.

C. Masonry Cement: Not permitted.

D. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

1. For colored mortar, provide natural sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar colors.

E. Aggregate for Grout: ASTM C 404.

F. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars

G. Water: Potable.

2.5 REINFORCING STEEL

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; ASTM A 616/A 616M, including Supplement 1; or ASTM A 617/A 617M, Grade 60 (Grade 400).

2.6 MASONRY JOINT REINFORCEMENT

A. General: ASTM A 951 and as follows:

1. Mill galvanized, carbon-steel wire for interior walls, unless noted below.
2. Hot-dip galvanized, carbon-steel wire for exterior walls and interior walls at Basement locations.
3. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
4. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
5. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units where indicated.

B. For single-wythe masonry, provide ladder type with single pair of side rods and cross rods spaced not more than 16 inches (407 mm) o.c.

C. For multi-wythe masonry composed of brick and CMU, type as follows:

1. Adjustable (2-piece) type with single pair of side rods and cross ties spaced not more than 16 inches (407 mm) o.c. and with separate adjustable veneer ties engaging the cross ties. Cross ties are U-shaped with eyes. Space side rods for embedment within each face shell of backup wythe and size adjustable ties to extend at least halfway through outer wythe but with at least 5/8-inch (16-mm) cover on outside face.

D. For multiple-wythe masonry, provide joint reinforcement with adjustable anchor system for rubble stone for filled cavity conditions, as follows:

1. For multiwythe masonry (CMU and stone veneer walls) provide system specifically designed to tie stone rubble veneer to CMU backup with a filled cavity consisting of a wire masonry tie section, vertical J-hook section and truss type reinforcement. System shall be designed for conditions when horizontal mortar joints do not align, and a large amount of vertical adjustability is required.
    a. Truss type reinforcement shall have single pair of side rods and cross rods at the CMU and an additional side rod to engage the J-hook, and shall be spaced not more than 16 inches o.c.
    b. J-Hook Section: ¼” diameter, and designed for hooking onto additional side rod.

c. Wire Tie Section: Triangular- shaped wire tie 3/16" diameter sized to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face; 195/295 Vee Byna-Tie or equal.
d. Material: Fabricate anchor system from stainless steel.
e. Product: Tie-HVR-190V Anchor System by Hohmann & Barnard, Inc. or equal system/product by one of the following:
   1) Wire-Bond
   2) Heckmann Building Products.

2.7 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.

B. Stainless Steel Wire: ASTM A580/A580M, Type 304.

C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.

D. Stainless Steel Bars: ASTM A276 or ASTM A666, Type 304.

E. Mill Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 641 (ASTM A 641M), Class 1 coating.

F. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.

G. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153

H. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.8 JOINT STABILIZATION ANCHORS

A. General: Contractor's option to select between the two types listed below.

B. Three-piece assemblies allowing movement at expansion, contraction or isolation joint while maintaining wall alignment in direction normal to the movement. Two 3/16-inch (4.8-mm) diameter wire rods with plastic sleeves separating two 1/32-inch (0.8-mm) sheet metal sleeves for embedding completely in mortar, zinc plated; Hohmann & Barnard “Slip-Set Stabilizer” or equivalent.

C. Galvanized 3/8-inch (9-mm) by 6 inches (150 mm) steel dowel vertically welded to a 2-inch (50-mm) by 5-inch (125-mm) steel plate with slotted holes for mounting to the underside of beams or deck, and a plastic sleeve with compressible filler to prevent dowel from bonding with mortar; Hohmann & Barnard PTA-420 with tube or equivalent.

2.9 ADJUSTABLE ANCHORS FOR CONNECTING TO STEEL FRAME

A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section: Crimped 1/4-inch- (6.4-mm-) diameter, stainless steel anchor section for welding to steel.
2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.1875-inch- (4.8-mm-) stainless steel.
3. Basis of Design Product: Hohmann & Barnard 359-FH Weld On Tie with VBT Vee Byna-Tie or one of the following, or equal.
   a. Type I Weld On Anchor and 1100 Tie by Wire Bond.
   b. 315-B Weld On Anchor and 316 Triangle Tie by Heckmann Building Products

2.10 ANCHORS FOR CONNECTING TO CONCRETE

A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section: Dovetail anchor section formed from minimum 0.0966-inch- (2.5-mm-) thick, stainless steel sheet.
2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.1875-inch- (4.8-mm-) stainless steel wire.
3. Basis of Design Product: Hohmann & Barnard 305 Dovetail Slot with 315 Flexible Dovetail Brick Tie or one of the following, or equal:
   a. 2102 Tie and 1304 Dovetail Slot by Wire Bond.
   b. 103 Tie and 100 Dovetail Slot by Heckmann Building Products

4. Use for stone veneer and brick.

2.11 ADJUSTABLE MASONRY-VENEER ANCHORS

A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing or insulation to wood or metal studs, and as follows:

1. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch (1.3 mm).

B. Screw-Attached, Masonry-Veneer Anchors for Metal Stud Back-up Construction: Units consisting of a wire tie section and a metal anchor section complying with the following requirements:
1. Anchor Section: Rib-stiffened, sheet metal plate with 9/32” diameter screw holes top and bottom; with projecting tabs having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
2. Wire Tie Section: Rectangular- shaped wire tie sized to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face.
3. Fabricate sheet metal anchor sections and other sheet metal parts from 14 gauge (1.9 mm) thick, stainless steel sheet.
4. Fabricate wire tie sections from 3/16 inch- (4.8-mm-) diameter, stainless steel wire.
5. Basis of Design Product: One of the following or equal:
   a. RJ-711;. Wire-Bond

b. HB-213; Hohmann & Barnard, Inc.
c. #213 Anchor with #282 Tie; Heckmann Building Products

C. Stainless-Steel Drill Screws for Steel Studs: Either made from Type 410 stainless steel or made with a carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 (4.8-mm) diameter by length required to penetrate steel stud flange by not less than three exposed threads

D. Expansion Bolt-Attached, Masonry-Veneer Anchors for Existing Masonry or Concrete Back-up Construction (and where dovetail slots have not been installed in concrete): Units consisting of a wire tie section and a metal anchor section complying with the following requirements:

1. Anchor Section: Rib-stiffened, sheet metal plate with 7/16” diameter bolt hole in the center for use with brass expansion bolt; with projecting tabs having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
2. Wire Tie Section: Rectangular- shaped wire tie sized to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face.
3. Fabricate sheet metal anchor sections and other sheet metal parts from 14 gauge (1.9-mm-) thick, stainless steel sheet.
4. Fabricate wire tie sections from 3/16-inch- (4.8-mm-) diameter, stainless steel wire.
5. Basis of Design Product: HB-5213 by Hohmann & Barnard, Inc. or comparable system/product by one of the following:
   a. Wire-Bond
   b. Heckmann Building Products (Pos-I-Tie system)

6. Use for brick and ashlar stone veneer.

E. Screw-Attached, Adjustable Anchor System for Rubble Stone for Concrete Backup: Units consisting of a wire masonry tie section, vertical J-hook section and a metal anchor backplate section specifically designed to tie stone rubble veneer to concrete backup. System shall be designed for conditions when horizontal mortar joints do not align, and a large amount of vertical adjustability is required.

1. Anchor Backplate Section: Sheet metal plate fabricated from 12 gauge stainless steel plate, with screw holes top and bottom on vertical section, 2-5/8 inches wide, with leg length as required to accommodate no insulation in cavity.
2. J-Hook Section: In diameter required to support loading, and designed for inserting into projecting leg of backplate.
3. Wire Tie Section: Rectangular- shaped wire tie 3/16" diameter sized to extend at least halfway through veneer but with at least 5/8-inch cover on outside face.
4. Material: Fabricate anchor system from stainless steel.
5. Product: Tie-HVR-195VB Anchor System by Hohmann & Barnard, Inc. or equal system/product by one of the following:
   a. Wire-Bond
   b. Heckmann Building Products.

F. Brass Expansion Bolt for Existing Masonry or Concrete Back-up Construction: Masonry fastener for fastening anchors to concrete, block, brick and into mortar joints complying with the following requirements:

1. Internal Bolt: ¼" diameter – 20, Type 304 stainless steel.
2. Stainless Steel Washer: ¾" OD, Type 18-8 stainless steel.
3. Knurled Expansion Sleeve and Expander Cone: Brass 260 alloy.
4. Fixture Clearance Hole: 7/16" diameter
5. ANSI Drill Bit Size: 3/8" diameter
6. Basis of Design Product: 523 Brass Expansion Bolt by Hohmann & Barnard, Inc. or equal system/product by one of the following:
   a. Wire-Bond
   b. Heckmann Building Products

2.12 RIGID ANCHORS

A. General: Fabricate from steel bars as follows:

1. 1-1/2 inches (38 mm) wide by 1/4 inch (6.4 mm) thick by 24 inches (600 mm) long, with ends turned up 2 inches (50 mm) or with cross pins.
2. Finish: Hot-dip galvanized to comply with ASTM A 153.

2.13 ANCHORS AND CONNECTORS FOR TERRA COTTA

A. Strap anchors for building with back-up wall or welding to existing steel shall be 1/8" thick minimum stainless steel, Type 304 conforming to ASTM A240.

B. Rod anchors for attaching into masonry shall be Type 304 stainless steel adhesive type with screen. Adhesive anchors in concrete shall have an ICC-ES Evaluation Service report (ESR) issued in accordance with ACI 355.4 or ICC-ES AC 308 for use in cracked concrete, including seismic applicability loading, and pursuant to the Office of Technical Certification and Research (OTCR) Building Bulletin 2014-018. Anchors installed in grouted masonry shall have a report issued in accordance with AC 58. Provide one of the following:
1. Hilti HY 70.
2. ITW Red Head C6+
3. Powers Fasteners AC100+Gold

C. Eye Rods and Pins: Type 304 stainless steel

D. Electrode for Welding Stainless Steel to Carbon Steel: E309-16. Keep electrode dry. Oven dry electrode after exposing it for more than 6 hours

2.14 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:

1. Headed bolts.

B. Postinstalled Anchors: Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Type: Chemical anchors.
2. Type: Expansion anchors.
3. Corrosion Protection (Indoor): Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).
4. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Alloy Group 1 or 4) for bolts and nuts; ASTM A 666 or ASTM A 276, Type 304 or 316, for anchors.
5. For Postinstalled Anchors in Concrete: Capability to sustain, without failure, a load equal to four times the loads imposed.
6. For Postinstalled Anchors in Grouted Masonry Units: Capability to sustain, without failure, a load equal to six times the loads imposed.

2.15 EMBEDDED FLASHING MATERIALS

A. Concealed Adhered Masonry Flashing: Provide stainless steel fabric laminated sheet flashing overlapping a full bed depth stainless steel drip as follows:

1. Basis of Design Product: Provide specified product of Hohmann & Barnard or equal products by York or Wire-Bond.
2. Sheet-Metal Drip Flashing: Fabricate from 22 gage stainless steel with the drip edge hemmed approximately 3/16-inch and a 2 inch turn-up, as indicated on Drawings.
3. Termination Bar: Stainless steel.
4. Self-Adhering Stainless Steel Fabric Laminated Sheet Flashing: Manufacturer's standard composite membrane consisting of a polymeric film laminated to a .003 inch stainless steel sheet, with a pressure-sensitive, clear adhesive; non-asphaltic; Mighty-Flash – SA Self-Adhering Stainless Steel Fabric Flashing by Hohmann & Barnard or equal. Verify compatibility with air barrier system that sheet flashing contacts.
   a. Primer: Flashing manufacturer's standard product or product recommended by flashing manufacturer for bonding flashing sheets to masonry and concrete; Primer – SA by Hohmann & Barnard or equal.

B. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:

1. Stainless Steel: ASTM A 240/A 240M, Type 304, 26 gauge 0.016 inch (0.40 mm) thick.
2. Fabricate drip edge in one continuous length, 4 inches wide, with a hemmed outer edge condition held flush with face of finished masonry.

C. Application: Unless otherwise indicated, use the following:

1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is partly exposed and is indicated to terminate at the wall face, use concealed flexible flashing with a metal drip edge.
3. Where flashing is fully concealed, use flexible flashing.

2.16 CAVITY-WALL INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, Type X, 15-psi (104-kPa) minimum compressive strength, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84. .

1. Products: Subject to compliance with requirements, provide one of the following:
   a. DiversiFoam Products; CertaFoam 15.
   b. DuPont; Dow Styrofoam Brand Cavitymate.
   c. Owens Corning; Foamular CW15 Square Edge.

2. Thickness: As indicated on Drawings.
3. Edges: Square edge.

B. Tape for Sealing Joints in Insulation: Type recommended by insulation board manufacturer for application indicated.

C. Adhesive: Type recommended by insulation board manufacturer for application indicated

2.17 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Material as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated, or required.

1. Styrene-Butadiene-Rubber Compound: ASTM D 2000, Designation M2AA-805.
2. Product: Hohmann & Barnard, Inc., RS Series or equal.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Wicking Material: Absorbent rope, made from UV-resistant synthetic fiber, 1/4 to 3/8 inch (6 to 10 mm) in diameter, in length required to produce 2-inch (50-mm) exposure on exterior and 18 inches (450 mm) in cavity. Use only for weeps.

1. Application: At cast stone trim, stone veneer and trim, and other locations as indicated

E. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe.

1. Color: Match mortar color.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equivalent:
   a. WeepVent by Mortar Net Solutions.
   b. CavClear Weep Vents.
   c. Weep Mesh by Advanced Building Products

3. Application: At brick veneer.

F. Cavity Drainage Material: 2-inch- (50-mm-) thick, reticulated, nonabsorbent mesh, made from polyethylene strands with 90% open plastic mesh configuration, and dovetail shape to maintain drainage at weep holes without being clogged by mortar droppings.

1. Basis of Design Product: Provide one of the following or equivalent:
   a. Mortar Net by Mortar Net Solutions
   b. Mortar Trap by Hohmann & Barnard, Inc.
   c. ProNet by Masonpro

G. Cavity Drainage Material: 3/4-inch- (50-mm-) thick, reticulated, nonabsorbent mesh, made from polyethylene strands with 90% open plastic mesh configuration.

1. Use in cavities with masonry back up and with less than 1 1/8" clear cavity only.
2. Product: Subject to compliance with requirements, provide CavClear Masonry Mat manufactured by CavClear.

2.18 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup (0.14-L) dry measure tetrasodium polyphosphate and 1/2-cup (0.14-L) dry measure laundry detergent dissolved in 1 gal. (4 L) of water.

B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Products for Cleaning Unit Masonry: Subject to compliance with requirements, provide one of the following:
   a. Cleaners for Red and Light-Colored Brick Not Subject to Metallic Staining with Mortar Not Subject to Bleaching: Sure Klean No. 600 Detergent; ProSoCo, Inc.
   b. Cleaners for Red and Dark-Colored Brick Not Subject to Metallic Staining: Sure Klean No. 101 Lime Solvent; ProSoCo., Inc.
   c. Cleaners for Brick Subject to Metallic Staining: Sure Klean Vana Trol; ProSoCo, Inc.

2.19 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

B. Colored Mortar for Cast Stone, Stone and Brickwork: Produce mortar of color specified, and to match approved mock-ups by using selected ingredients. Do not alter specified proportions without Architect's approval.

1. Use naturally colored aggregates to produce required mortar color to greatest extent possible, before adding pigments.
2. Pigments: Where mortar pigments are used, do not exceed a pigment-to-cement ratio of 1:10 by weight.
3. Color:
   a. For Brick, Terra Cotta and Cast Stone: Spec Mix 7072 Limestone, 7072-15 and 7072-8
   b. For Stonework: Match existing.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.

1. Limit cementitious materials in mortar to portland cement and lime.
2. For masonry below grade, in contact with earth, and where indicated, use Type M.
3. For reinforced masonry, shear walls, exterior above-grade load-bearing and exterior above-grade non-load-bearing walls, interior load-bearing walls, parapet walls, and where indicated, use Type N.
4. For interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
5. For cast stone, stone and brick units, use Type N.

D. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
2. Verify that foundations are within tolerances specified.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.2 INSTALLATION, GENERAL

A. For cold-weather construction comply with requirements contained in ACI 530.1-05

B. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

C. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

D. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

E. Cut masonry units with motor-driven saws to provide clean, sharp, un-chipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

F. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

G. Wetting of Brick and Terra Cotta: Wet brick and terra cotta before laying if the initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at the time of laying

3.3 CONSTRUCTION TOLERANCES

A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:

B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.

C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), nor 1/2 inch (12 mm) maximum.

D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, the following tolerances will apply.

1. Variation from Plumb: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m) or 1/4 inch in 20 feet (6 mm in 6 m) or more.
2. Variation from Level: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (9 mm) maximum.
3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or one-fourth of nominal joint width, whichever is less.
4. Variation in Plane between Adjacent Surfaces (Lipping): Do not exceed 1/16-inch (1.5-mm) difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).

F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Lay exposed masonry in running bond pattern unless otherwise indicated; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

1. Flemish bond, typical installation.
2. Provide jack arches, gothic arches, corbelled construction and other decorative features as indicated on Drawings.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches (50 mm). Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.

F. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

H. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated, and at all exterior wall locations.

I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.
2. At fire-rated partitions, install firestopping in joint between top of partition and underside of structure above to comply with Division 07 Section "Firestopping."

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

B. Lay solid brick-size masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against the cavity face of the brick.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.

D. Collar Joints in Masonry: Fill the vertical, longitudinal joint between wythes solidly with grout for exterior walls noted, do not fill insulated cavity walls.

3.6 BONDING OF MULTIWYTHE MASONRY

A. Bond masonry veneer to concrete block with ladder type reinforcing with eyes for attachment of pintle sections in horizontal joints to bond wythes together. Provide ties as shown, but not less than one attachment point for 1.77 sq. ft. (0.16 sq. m) of wall area spaced not to exceed 16 inches (406 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings.

B. Use masonry joint reinforcement installed in horizontal mortar joints to bond wythes together.

C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners, unless otherwise indicated.

1. Provide continuity with masonry joint reinforcement at corners by using prefabricated "L" units as well as masonry bonding.

D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:

1. Provide continuity with masonry joint reinforcement by using prefabricated "T" units.

3.7 CAVITIES

A. Keep cavities clean of mortar droppings and other materials during construction. Strike joints facing cavities flush.

1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.

B. Apply air barrier to face of backup to comply with Section 072726 "Fluid-Applied Membrane Air Barriers."

C. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 MASONRY JOINT REINFORCEMENT

A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

1. Space reinforcement not more than 16 inches (406 mm) o.c.
2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.
   a. Reinforcement above is in addition to continuous reinforcement.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:

1. Provide an open space not less than 1 inch (25 mm) in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 16 inches (406 mm) o.c. horizontally, with not less than 1 anchor for each 1.77 sq. ft. (0.16 sq. m) of wall area.

3.10 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers to wall framing or solid backup with masonry-veneer anchors to comply with the following requirements:

1. Fasten each anchor section through sheathing to metal wall framing with two metal screw fasteners of type indicated.
2. Fasten each anchor section to CMU or concrete back-up with expansion bolt anchors
3. Embed tie sections in masonry joints. Provide not less than 2 inches (50 mm) of air space between back of masonry veneer and face of sheathing.
4. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
5. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 16 inches (406 mm) o.c. horizontally, with not less than 1 anchor for each 1.77 sq. ft. (0.16 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around the perimeter.

B. Refer to Division 04 Section “ Stone Masonry Veneer” for installing stone veneer to CMU and concrete backup

3.11 ANCHORING TERRA COTTA

A. Attach new terra cotta pieces to substrate with metal anchors as detailed on approved shop drawings.

B. Securely attach anchors, hangers, bolts, clips, rods, and pins as required for securing terra cotta pieces. Ensure items are properly sized and accurately located.

3.12 SETTING TERRA COTTA

A. Fill terra cotta formed cavities containing reinforcement and other locations indicated on approved shop and setting drawings with mortar. Place and consolidate grout without displacing reinforcement. Ensure that steel reinforcement, supports, anchors, and ties are encased with mortar and permanently protected from corrosion.

B. Provide weep holes through mortar joints as indicated on approved shop and setting drawings. Keep weep holes free of mortar and grout.

3.13 CONTROL AND EXPANSION JOINTS

A. General: Install vertical control and expansion joints at one side of all doorways and at wall locations maximum 25 ft. o.c., and where indicated. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

B. Form control joints in concrete masonry with preformed control-joint gaskets designed to fit standard sash block.

C. Form expansion joints in brick made from clay or shale by building in joint fillers not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants." Keep joint free and clear of mortar.

D. Build in horizontal, pressure-relieving joints where indicated; construct joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants."

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.

3.14 LINTELS

A. Install steel lintels where indicated.

B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.

1. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

C. Provide minimum bearing of 8 inches (200 mm) at each jamb, unless otherwise indicated.

3.15 FLASHING, WEEP HOLES, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Unless otherwise indicated, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

C. Install flashing as follows:

1. At masonry-veneer walls, apply flexible flashing over the air barrier to a height of 6” above the top of the cavity drainage material and secure flashing top edge with a termination bar to substrate. Apply sealant to top of termination bar. Install a 6” wide strip of compatible self-adhesive membrane over the installed termination bar and sealant, centered on the termination bar. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal drip edge
2. At lintels and shelf angles, extend flashing a minimum of 4 inches (100 mm) into masonry at each end. At heads and sills, extend flashing 4 inches (100 mm) at ends and turn flashing up not less than 2 inches (50 mm) to form a pan.
3. Extend sheet metal flashing 1/2 inch (13 mm) beyond face of masonry at exterior and turn flashing down to form a drip.
4. Install end dams at all window and door flashing locations.

D. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:

1. Use mesh weep vents to form weep holes at brick.
2. Use wicking material to form weep holes above flashing under stone and cast stone sills. Turn wicking down at lip of sill to be as inconspicuous as possible
3. Space weep holes 24 inches (600 mm) o.c.
4. Place cavity drainage material immediately above flashing in cavities.

E. Install vents in vertical head joints at the top of each continuous cavity at spacing indicated. Use plastic weep hole/vents to form vents.

F. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

3.16 REINFORCED UNIT MASONRY INSTALLATION

A. General: Provide reinforced unit masonry walls at all walls as indicated.

B. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar

and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

C. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

D. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.17 FIELD QUALITY CONTROL

A. Inspectors: Owner will engage qualified certified testing agency to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.

1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
2. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

B. Testing Frequency: Tests and Evaluations listed in this Article will be performed during construction for each 5000 sq. ft. (465 sq. m) of wall area or portion thereof.

C. Mortar Test (Property Specification): For each mix provided, per ASTM C 780 . Test mortar for mortar air content and compressive strength

D. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.

3.18 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.
6. Clean brick masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 042000

SECTION 044100 - STONE MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes:

1. Stone veneer facing on concrete and concrete masonry unit backup at exterior walls.

B. Mortar, grout, anchors, flashing, and miscellaneous masonry accessories for stone veneer are specified in Division 04 Section "Unit Masonry Assemblies."

1.2 SUBMITTALS

A. Product Data: For setting and pointing mortars.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article

C. Samples for Verification: For the following:

1. Full-size units for each color, grade, finish, and variety of stone required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.
2. Colored mortar samples, for each mortar color required, showing the full range expected in the finished construction.

1.3 QUALITY ASSURANCE

A. Source Limitations for Stone: Obtain all stone for each variety of stone from single source with resources to provide materials of consistent quality in appearance and physical properties without delaying the work.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer.

C. Single Source Responsibility for Installation of Stone Masonry Veneer Work: All stone masonry veneer work, including installation of associated stone trim, shall be performed by a single firm meeting qualifications specified in this section.

D. Installer Qualifications for Stone Masonry Veneer Work: Work must be performed by a firm having not less than five (5) years successful experience in comparable stone masonry veneer work including work on at least three (3) buildings in the last five years and employing personnel skilled in the installation processes and operations indicated.

1. Only skilled journeymen masons who are thoroughly trained and experienced in

performing stone masonry veneer work including field trimming and installing and the skills required, and completely familiar with the materials and methods required shall be used for the work.

2. One skilled journeyman mason shall be present at all times during execution of the work and shall personally direct the work.
3. In acceptance or rejection of stone masonry veneer work, no allowance will be made for lack of skill on the part of the workmen

E. Mockups: Before installing stone masonry veneer work, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Final approval of exposed mortar color and texture, and stone bonding (pattern) will be made based on acceptance of mock-up. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

1. Locate mockup in the locations as directed by Architect.
2. Build mock-up containing the following types of masonry approximately 4'-0" long by 4'-0" high by full thickness, including stone face and backup wythes, trim units and accessories. Include a sealant-filled joint at least 16 inches long in the mockup.
   a. Typical exterior stone-veneer wall, for each type to be provided, complete with back-up, reinforcing/ties, insulation, flashing, and weep holes. Include all types of stone to be used in the Work and all colors of mortar to be used in the Work.

3. Protect accepted mockups from the elements with weather-resistant membrane.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store and handle stone, mortar and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, or other causes.

1.5 PROJECT CONDITIONS

A. Hot-Weather and Cold-Weather Requirements: Comply with requirements contained in Section 042000.

PART 2 - PRODUCTS

2.1 STONE SOURCES

A. Stone Veneer: Natural fieldstone to match existing. Provide granite round and split fieldstone in the following mix:

1. 60% round New England Fieldstone by Black River Quarries with the following attributes:

a. 4" to 14" high
b. 4" to 16" long
c. Sawed to 5" depth

2. 40% ashlar New England Split Fieldstone by Black River Quarries with the following attributes:
   a. 2.5" to 6" high
   b. 3" to 12" long
   c. 3" to 5.5" split depth

2.2 MORTAR AND GROUT MATERIALS FOR STONE VENEER

A. Refer to Section 042000. Provide Type N colored mortar in color to match existing.

2.3 MISCELLANEOUS MASONRY ACCESSORIES

A. Refer to Section 042000 for specifications for anchors and ties, flashing and other accessories.

2.4 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup (0.14-L) dry-measure tetrasodium polyphosphate and 1/2-cup (0.14-L) dry-measure laundry detergent dissolved in 1 gal. (4 L) of water.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive stone work and conditions under which stone work will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the work.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 SETTING OF STONE VENEER, GENERAL

A. Comply with requirements specified in Sections 042000 as they relate to the work of this section.

B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.

C. Arrange stones for accurate fit in original bonding pattern.

D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance matching existing stone work.

E. Set stone to comply with requirements indicated on Drawings. Install veneer anchors, supports, fasteners, and other attachments indicated or necessary to secure stone veneer assemblies in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

F. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment, if any.

1. Lay walls with joint widths as specified and as indicated on Drawings.

G. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.

1. Keep expansion and pressure-relieving joints free of mortar and other rigid materials.
2. Sealing expansion, control, and pressure-relieving joints is specified in Division 07 Section "Joint Sealants."

H. Contiguous Work: Provide reveals, reglets, and openings as required to accommodate contiguous work.

3.4 INSTALLATION OF ANCHORED STONE VENEER ASSEMBLIES

A. Anchor stone veneer to concrete backup with adjustable, screw-attached veneer anchors of type specified in Section 042000. Fasten backplate of anchors to concrete using expansion anchors. Embed triangular masonry tie in mortar joints.

B. Anchor stone veneer to concrete masonry unit backup with anchors attached to joint reinforcing of type specified in Section 042000. Insert vertical J-hook with one triangular masonry tie threaded through rod of J-hook into slots of metal backplates or masonry joint reinforcing eyes in accordance with manufacturer’s directions. Embed triangular masonry tie in mortar joints.

C. Anchor stone veneer to cold formed metal framing and sheathing backup with adjustable, screw-attached veneer anchors of type specified in Section 042000. Fasten backplate of anchors through sheathing into metal framing members using specified fasteners. Embed triangular masonry tie in mortar joints

D. Space anchors not more than 16 inches o.c. vertically and 24 inches o.c. horizontally.

Install additional anchors within 12 inches of openings, sealant joints, and perimeter at intervals not exceeding 12 inches

E. Set stone in full bed of mortar with full head joints, unless otherwise indicated. Build veneer anchors into mortar joints as stone is set.

F. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches, through stone masonry and with at least a 5/8-inch cover on exterior face.

G. Fill collar joint full with mortar.

H. Refer to Section 042000 for additional installation specifications including installation of flashings, weep holes, etc.

I. Maintain uniform joint widths.

J. Tool exposed joints when mortar is thumbprint hard, using a jointer larger than the joint thickness. Tool joints to match existing joint profile.

3.5 INSTALLATION TOLERANCES

A. Refer to Section 042000.

3.6 ADJUSTING AND CLEANING

A. Remove and replace stone veneer assemblies of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Stone veneer assemblies not matching approved samples.
4. Stone veneer assemblies not complying with other requirements indicated.

B. Replace in a manner that results in stone veneer assemblies matching approved samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean stone as work progresses. Remove mortar fins and smears before tooling joints.

D. Clean stone after pointing mortar and sealant has had opportunity to cure, using clean water and stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning agents containing caustic compounds or abrasives, or other materials or methods that could damage stone.

3.7 PROTECTION

A. Protection: Provide final protection in a manner acceptable to Architect that ensures cut stone work is without damage and deterioration at the time of final acceptance.

END OF SECTION 044100

SECTION 047200 – CAST STONE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cast stone watertable, sills, decorative columns, banding, copings, trim, caps, and other shapes indicated on drawings.
2. Steel support and retention connections for cast stone, including all ties, anchors, and necessary shims to supporting structure.

B. Related work specified elsewhere:

1. Mortar and grout for cast stone is specified in Division 04 Section “Unit Masonry”.

1.2 DEFINITIONS

A. Cast Stone: Architectural precast concrete building units intended to simulate natural cut stone.

B. Arris: The sharp edge of a Cast Stone Unit.

1.3 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for cast stone units.

B. Design Mixes: For each different mix.

C. Shop Drawings: Detail fabrication and installation of cast stone units. Indicate member locations, plans, elevations, dimensions, shapes, cross sections, limits of each finish, and types of reinforcement, including special reinforcement, and lifting devices necessary for handling and erection.

1. Where new cast stone is required to match existing profiles and shapes, include the following:
   a. Each different shape to be provided.
   b. Details of surface finishing work for each cast stone unit replicating existing cast stone elements.

D. Samples for Verification:

1. For each mortar color required, showing the full range expected in the finished construction. Make samples using the same sand and mortar ingredients to be used on Project. Label samples to indicate type and amount of colorant used.

2. For each color and texture of cast stone required, 10-inches (250 mm) square in size.

E. Full-Size Samples: For each type of cast stone unit required. Make available for Architect's review at Project site before installing cast stone.

1. Approved Samples may be installed in the Work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Fabricator and Installer.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of cast stone with requirements indicated.

C. Certification that the materials incorporated in this Work are free from hazardous contaminates.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Refer to requirements specified in Division 04 Section “Unit Masonry”. Installation of cast stone units shall be performed by the same entity performing unit masonry work.

B. Fabricator Qualifications: A firm experienced in manufacturing cast stone units similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to manufacture required units.

1. Fabricator is a producing member of the Cast Stone Institute

C. Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

D. Source Limitations for Cast Stone: Obtain cast stone units through one source from a single manufacturer.

E. Mock-ups: Provide mock-up as specified in Division 04 Section “Unit Masonry”.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Pack, handle, and ship cast stone units in suitable packs or pallets.

1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports.
2. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

B. Store installation materials on elevated platforms, under cover, and in a dry location.

C. Store mortar aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.7 COORDINATION

A. Coordinate production and delivery of cast stone with masonry replacement work to minimize the need for on-site storage and to avoid delaying the Work.

B. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Provide products of Continental Cast Stone Manufacturing, Inc. or equal products manufactured by one of the following

1. Arriscraft
2. American ArtStone.

2.2 CAST STONE MATERIALS

A. General: Comply with ASTM C 1364 and the following:

B. Portland Cement: ASTM C 150, Type I, containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C 33; gradation as needed to produce required textures.

D. Fine Aggregates: Manufactured or natural sands complying with ASTM C 33, gradation as needed to produce required textures.

E. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

F. Reinforcement: Deformed steel bars complying with ASTM A 615/A 615M.

1. Epoxy Coating: ASTM A 775/A 775M.
2. Galvanized Coating: ASTM A 767/A 767M.

G. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 276 or ASTM A 666, Type 304.

2.3 STAINLESS-STEEL SUPPORT AND CONNECTION MATERIALS

A. Anchors: Type and size indicated, fabricated from stainless steel complying with ASTM A 276 or ASTM A 666, Type 304.

1. For connecting cast stone to stainless steel tube reinforcing provide Hohmann & Barnard 360 Grip Stay channel slot welded to steel column and 365 Bent Grip Stay Channel Slot anchor to tie the cast stone to the stainless steel tube, or equal.

B. Dowels: Round stainless-steel bars complying with ASTM A 276, Type 304, 1/2-inch (12-mm) diameter

C. Accessories: Provide clips, hangers, plastic shims, and other accessories required to install cast stone units.

2.4 CAST STONE FABRICATION

A. Provide cast stone units complying with ASTM C 1364.

1. Provide units that are resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666, Procedure A, as modified by ASTM C 1364.

B. Physical Properties:

1. Compressive Strength: Minimum 6,500 psi when tested per ASTM C 1194.
2. Absorption: Maximum 6% when tester per ASTM C 1195.

C. Reinforce units as indicated and as required by ASTM C 1364. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches (38 mm) of material. Minimum coverage shall be twice the diameter of the bars.

1. Area of reinforcement in panels greater than 12" wide shall be not less than 1/4 percent of the cross section area when steel is specified.

D. Fabrication Method: Use a Vibrant-Tamp placement method or machine manufacture using a zero slump mixture to achieve desired appearance and physical properties.

E. Fabricate units with sharp arris and details accurately reproduced with indicated texture on all exposed surfaces, unless otherwise indicated.

1. Slope exposed horizontal surfaces at least 1:12, unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements, unless otherwise indicated.

F. Cast Stone Units Replicating Existing: Fabricate cast stone units to exactly replicate existing cast stone units.

G. Cure and finish units as follows:

1. Cure units in totally enclosed curing room under dense fog and water spray at 95 percent relative humidity for 24 hours.
2. Yard cure units until the sum of the mean daily temperatures for each day equals or exceeds 350 deg F.
3. Acid etch units to remove cement film from surfaces indicated to be finished.

H. Color and Texture: Exposed surfaces shall exhibit a fine-grained texture similar to natural stone; no bug-holes or air voids shall be permitted.

1. Color and Texture: Color and texture shall match existing cast stone, after it has been cleaned.

2.5 MORTAR MATERIALS

A. Mortar materials are specified in Division 04 Section "Unit Masonry”.

2.6 MISCELLANEOUS MATERIALS

A. Cast Stone Cleaner: Sure Kleen #600 by ProSoCo Products Inc., or equal.

2.7 MORTAR MIXES

A. Mortar mix is specified in Division 04 Section "Unit Masonry”.

2.9 SOURCE QUALITY CONTROL

A. Employ an independent testing agency to sample and test cast stone units according to ASTM C 1364.

1. Include testing for freezing and thawing resistance.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of cast stone.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

1. Comply with Cast Stone Institute recommendation for installation of cast stone units.

2. Comply with installation requirement specified in Division 04 Section "Unit Masonry", as applicable.

B. Set cast stone as indicated on Contract Drawings. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

C. Drench units with clear water just before setting.

D. Set units in full bed of mortar with full head joints, unless otherwise indicated. Build anchors and ties into mortar joints as units are set.

1. Fill dowel holes and anchor slots with mortar.
2. Fill collar joint solid as units are set.
3. Build concealed flashing into mortar joints as units are set.
4. Leave head joints open in coping and other units with exposed horizontal surfaces. Keep joints clear of mortar, and rake out to receive sealant.

E. Rake out joints for pointing with mortar to depths of not less than 3/4 inch (19 mm). Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

F. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch (10 mm). Compact each layer thoroughly and allow to become thumbprint hard before applying next layer.

G. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

H. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.

1. Sealing joints is specified in Division 07 Section "Joint Sealants."
2. Keep joints free of mortar and other rigid materials.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m) or 1/4 inch in 20 feet (6 mm in 6 m) or more.

B. Variation from Level: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (9 mm) maximum.

C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or one-fourth of nominal joint width, whichever is less.

D. Variation in Plane between Adjacent Surfaces (Lipping): Do not exceed 1/16-inch (1.5-mm) difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.4 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean cast stone as work progresses. Remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
4. Clean cast stone in conformance cleaner manufacturer’s directions.

END OF SECTION 047200

SECTION 047210 – ARCHITECTURAL CAST STONE REPLACEMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to work of this section.

B. Section 040120 – Masonry Restoration.

C. Section 049300 – Masonry Restoration Cleaning.

1.2 DESCRIPTION OF WORK

A. Includes cast stone elements for restoration:

1. Coping stones

B. Manufacturer shall furnish cast stone covered by this specification.

C. Installation by Contractor covered under Section 040120.

D. Mortar is specified in Section 040120.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ACI 318 – Building Code Requirements for Reinforced Concrete.
2. ASTM A 185 – Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
3. ASTM A1064 – Standard Specification for Carbon Steel Wire and Welded Wire.
4. Reinforcement, Plain and Deformed, for Concrete.
5. ASTM A 615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.
6. ASTM C 33 – Standard Specification for Concrete Aggregates.
7. ASTM C 150 – Standard Specification for Portland Cement.
8. ASTM C 595 – Blended [Hydraulic] Cement.
9. ASTM C 1157 – Hydraulic Cement.
10. ASTM C 173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volume Method.
11. ASTM C 231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. ASTM C 260 – Standard Specification for Air-Entrained Admixtures for Concrete.
13. ASTM C 270 – Standard Specification for Mortar for Unit Masonry.

14. ASTM C 426 – Standard Test Method for Linear Shrinkage of Concrete Masonry Units.
15. ASTM C 494 – Standard Specification for Chemical Admixtures for Concrete.
16. ASTM C 618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
17. ASTM C 666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
18. ASTM C 979 – Standard Specification for Coloring Pigments for Integrally Pigmented Concrete.
19. ASTM C 989 – Standard Specification for Ground Granulated Blast-Furnace Slag for use in Concrete.
20. ASTM C 1116 – Standard Specification for Fiber Reinforced Concrete and Shotcrete.
21. ASTM C 1194 – Standard Test Method for Compressive Strength of Architectural Cast Stone.
22. ASTM C 1195 – Standard Test Method for Absorption of Architectural Cast Stone.
23. ASTM C 1364 – Standard Specification for Architectural Cast Stone.
24. ASTM D1729 – Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials.
25. ASTM D 2244 – Standard Test Method for Calculation of Color Differences from instrumentally Measured Color Coordinates.
26. ASTM D7957– Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement.
27. TMS 404 – Standard for the Design of Architectural Cast Stone.
28. TMS 504 – Standard for the Fabrication of Architectural Cast Stone.
29. TMS 604 – Standard for the Installation of Architectural Cast Stone.
30. Architectural Precast Association (APA).
31. Cast Stone Institute (CSI).
32. Before work of this section proceeds, a meeting is required between the Contractor, Architect, Engineer, and manufacturer's representative to review repair locations (as area is accessible), sequence of work and site access/restrictions.

B. Organizations:

1. ACI: American Concrete Institute, 38800 Country Club Dr., Farmington Hills, MI 48331, (248) 848-3700, www.concrete.org.
2. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.
3. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
4. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
5. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.
6. Cast Stone Institute, 813 Chestnut Street, Lebanon, PA 17042, (717) 272-3744, www.castone.org.

7. Architectural Pre-Cast Association, 325 John Knox Rd. L-103, Tallahassee, FL 32303, (850) 205 5637, www.archprecast.org.
8. National Precast Concrete Association, 1320 City Center Dr #200, Carmel, IN 46032, (317) 571-9500, www.precast.org.

C. Manufacturer Qualifications:

1. Manufacture: Cast stone units shall be plant fabricated.
2. Cast stone shall be produced in a plant certified by the Cast Stone Institute® or Architectural Precast Association.
3. Manufacturer shall have sufficient plant facilities to produce the shapes, quantities and size of Cast Stone required in accordance with the project schedule.
4. Manufacturer shall submit a written list of (3) projects similar in scope and level of detail completed in the last (5) years, along with owner, architect and contractor references.
5. Work on the cast stone units shall not proceed until approval of the proposed manufacturer has been given.
6. Installer: The person(s) performing the Work of this Section and their Supervisor shall be personally experienced in the installation of cast stone and shall have been regularly employed by a Company installing cast stone for a minimum of 2 years.

D. Standards: Comply with the requirements of TMS 504 and 604, the Cast Stone Institute® Technical Manual, and the project specifications. Where a conflict may occur, the contract documents shall prevail.

E. Mortar Sampling and Trial Mix Testing: See Specification Section 040120.

F. Field-Constructed Mock-Ups: See Specification Section 040120.

1.4 DEFINITIONS

A. Cast stone – a refined architectural concrete building unit manufactured to simulate natural cut stone, used in Division 4 masonry applications.

1. Dry Cast – manufactured from zero slump concrete.
   a. Vibrant Dry Tamp (VDT) Casting Method: Vibratory ramming of earth moist, zero-slump concrete against a rigid mold until it is densely compacted.
   b. Machine Casting Method: Manufactured from earth moist, zero-slump concrete compacted by machinery using vibration and pressure against a mold until it becomes densely consolidated.
2. Wet Cast – manufactured from measurable slump concrete.
   a. Wet Casting Method: Manufactured from measurable slump concrete and vibrated into a mold until it becomes densely consolidated.

1.5 SUBMITTAL PROCEDURES

A. Comply with Section 013300 – Submittal Procedures.

B. Samples:

1. Submit samples for verification for each color and texture and trim shape of cast stone required, 4 inches square in size 12 x 12 x 1-1/2 inch thick. Clean a two-foot by two-foot surface of existing cast stone, using approved cleaning methods, for sample comparison.

C. Certification: Submit valid Cast Stone Institute® Plant Certification, or equal.

D. Qualifications Data for Manufacturer: Submit manufacturers test results of cast stone previously made by the manufacturer.

1. Include copies of material test reports, indicating compliance of cast stone with ASTM C1364.
    a. Provide test reports based on testing within previous six months.
    b. Provide test reports for ASTM C1194 Compressive Strength testing for every 500 cubic feet of cast stone produced, based on testing within previous six months.
    c. Provide test reports for ASTM C1195 Absorption testing for every 500 cubic feet of cast stone produced, based on testing within previous six months.
    d. Provide test reports for ASTM C666 Freeze Thaw testing for every mix design of cast stone produced.

E. Shop Drawings: Show all applicable information in accordance with Section 4 of TMS 504.
1. Submit manufacturers shop drawings including name of manufacturer, construction details, dimensions of components (including copes, cuts, and openings), profiles, cross-sections, details and location of reinforcement, exposed faces, arrangement of joints, slots to receive anchors, unit color, architectural finish and annotation of stone types and their location on elevation drawings noting each replacement stone. Contractor to supplement shop drawings with details of anchorage of cast stone to structural members (including type, size, and location) per anchorage information on Drawings and note shim layout.
2. Assign a unique number to each unit being replaced or removed.
3. Submit representative photographic documentation of each type of stone scheduled for replacement prior to removal for verification of match. Document location of existing stone anchorage (at replacement location and adjacent stones to remain) identified during removals.

F. Quality Control Submittals:

1. Design Data:
   a. Design Mix: Submit design mix for each mix used for the Work of this Section 12 weeks prior to start of casting. Cast stone units shall not be cast until approval of mix(es) has been received in writing.
2. Manufacturer's Qualifications Data:
   a. Firm name, address, and telephone number.
   b. Period of time firm has manufactured cast stone.
   c. Furnish to the Director, the names and addresses of 3 similar projects completed by the firm. Include name and phone number of contact person for each project.
   d. Firm must be a member of the Cast Stone Institute or Architectural Precast Association
3. Installer's Qualifications Data:
   a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
   b. Period of time installer has installed cast stone.

G. Warranty: Manufacturer shall provide a written 10-year warranty similar in scope to the Cast Stone Institute® Member Limited Warranty. This document is available on the Cast Stone Institute website, www.caststone.org.

1.6 MANUFACTURING TOLERANCES

A. Meet requirements of Section 5 of TMS 504 and the Cast Stone Institute, including the following:

1. Minimum Thickness shall be 2½ inches to facilitate testing for compressive strength and absorption as specified in ASTM C-1364 Standard Specification for Architectural Cast Stone.
2. Cross section dimensions shall not deviate by more than 1/8 inch +/- from approved dimensions.
3. Length of units shall not deviate by more than length/360 or 1/8 inch +/-, whichever is greater, not to exceed +/- 1/4 inch.
   a. Out-of-Square (difference in length of the two diagonal measurements): 1/4 inch.
4. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed to by the manufacturer.
5. Thickness: Plus or minus 1/8 inch.
6. Over-All Height/Length and Width: Plus or minus 1/8 inch.
7. Warp, bow or twist of units shall not exceed length/ 360 or ±1/8 in., whichever is greater.
8. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features – On formed sides of unit, 1/8 inch, on unformed sides of unit, 3/8 inch, maximum deviation.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CAST STONE

A. Comply with ASTM C 1364.

B. Physical Properties: Provide the following:

1. Compressive Strength – ASTM C 1194: 6,500 psi minimum for products at 28 days.
2. Absorption – ASTM C 1195: 6.0% maximum by the cold-water method at 28 days.
3. Air Content – ASTM C 173 or C 231, for wet cast product shall be 4.0-8.0% for units exposed to freeze-thaw environments. Air entrainment is not required for VDT products. Record results of tests and furnish a copy of test results to the Director's Representative.
4. Freeze-thaw – ASTM C666 in accordance with ASTM C 1364: The CPWL shall be less than 5.0% after 300 cycles of freezing and thawing.
   a. Freeze-Thaw Resistance: Freeze-thaw test specimens shall have a minimum durability factor of 70 when tested in accordance with ASTM C 666, Procedure B.
5. Linear Shrinkage – ASTM C 426: Shrinkage shall not exceed 0.065%. Test and report in accordance with ASTM C1364.

2.2 RAW MATERIALS

A. Portland Cement – Type I, Type II, or Type III, white and/or grey, ASTM C 150 or ASTM C595 Blended Hydraulic Cement (Type 1L) containing not more than 0.60 percent total alkali when tested according to ASTM C114.

1. Cement for Exposed Surfaces/Facing: White, buff, light gray or dark gray Portland cement as necessary to match required color of concrete and mortar.

B. Coarse Aggregates – Granite, quartz, marble, or limestone To match existing for appearance, ASTM C 33, except for gradation, and are optional for the VDT casting method. Gradation and colors as needed to produce required cast stone textures and colors.

C. Fine Aggregates – To match existing for appearance. Manufactured or natural sands, ASTM C 33, except for gradation. Gradation and colors as needed to produce required cast stone textures and colors.

D. Color Pigment: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis. Match existing.

E. Admixtures – Comply with the following:

1. Air-Entraining Admixture: ASTM C 260.
   a. Air-Entrainment: 8 percent (by volume) total air content, with an allowable tolerance of plus or minus 1.5 percent. Use air-

entraining admixture, not air-entrained cement.

2. Water-Reducing Admixture: ASTM C 494 Type A
3. Water-Reducing, Retarding Admixture: ASTM C494, Type D.
4. Water-Reducing, Accelerating Admixture: ASTM C494, Type E.
5. Nonchloride Waterproofing Admixture: “KIM – Krystol Internal Membrane” by Kryton International Inc.; “Xypex Admix C-500, C-1000, or C-2000” by Xypex Admin C-500, C-1000, or C-2000” by Xypex Chemical Corporation; or “Anti-Hydro – NC or NCR Waterproof Concrete” by Anti-Hydro International, Inc.; “MasterLife 300D” by Master Builders and “Eucon Vandex AM-10” by Euclid Chemical Co.
6. Other admixtures: Integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
7. ASTM C 618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
8. ASTM C 989 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.
9. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.

F. Water – Potable. Fresh, clean, and free from injurious amounts of oils, acids, alkalis, salts, organic material, and other deleterious substances.

1. The quantity of water used shall not exceed 5 gallons per 94-pound bag of cement.

G. Reinforcing Bars:

1. ASTM A 615, deformed: Grade 60 steel galvanized or epoxy-coated when cover is less than 1½ in.
   a. Epoxy Coating: ASTM A775.
   b. Galvanized Coating: ASTM A767.
2. ASTM D7957: Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement
3. Welded Wire Fabric: ASTM A 1064 galvanized.
4. Tie Wire: Galvanized.

H. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A240, ASTM A276, or ASTM A666, Type 304.

I. See Specification Section 040120 for anchoring stone setting devices.

J. Fiber reinforcement (optional): ASTM C1116.

K. Source of Materials: Individual materials shall be obtained from a single source for all similar cast stone units.

2.3 COLOR AND FINISH

A. Match adjacent stone color and texture.

B. All surfaces intended to be exposed to view shall have texture to match existing stone, with no air voids in excess of 1/32 inch and the density of such voids shall be less than 3 occurrences per any 1 square inch and not obvious under direct daylight illumination at a 5-foot distance. Polished and cleaned finish as required to bring out the full color and character of the exposed aggregate.

1. Exposed/Facing Aggregates: Clean, hard, durable, non-staining, selected and graded aggregate of required appearance, uniform in quality, and free from thin and elongated pieces.
   a. Appearance/Color: Match existing.
   b. Size: Match existing.

C. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at 10-foot distance.

1. ASTM D 2244 permissible variation in color between units of comparable age submitted to similar weathering exposure.
   a. Total color difference – not greater than 6 units.
   b. Total hue difference – not greater than 2 units.

D. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 10-foot distance.

E. Remove cement film, if required, from exposed surfaces prior to packaging for shipment.

2.4 FABRICATION

A. Forms shall conform to the shape, lines, and dimensions of the cast stone units to be produced, be sufficiently tight to prevent leakage of cement paste, and be constructed to prevent damage to the concrete. Forms shall be rigidly assembled, braced, and stiffened as required to produce castings within the specified tolerances.

B. Place concrete, facing and backing, in a continuous operation for each unit until the full thickness is reached and the unit is completely cast. Place concrete in a manner which will avoid segregation.

C. Consolidate concrete by vibration so that the concrete is thoroughly worked around the steel reinforcement and other embedded items, and into corners and angles of the forms.

2.5 REINFORCING

A. Reinforce the units as required for safe handling and structural stress per ASTM

C 1364.

B. Steel reinforcement shall be accurately positioned and securely held in place by devices that will not be exposed on or mar the appearance of exposed surfaces on the cast stone units.

C. Minimum reinforcing shall be 0.25 percent of the cross-section area.

D. Reinforcement cover shall be noncorrosive where faces are exposed to weather not less than 1½ inches of concrete material or twice the diameter of the bars, whichever is greater. For wet cast stone using bars larger than No. 5, cover shall be a minimum of 2 inches.

E. Welded wire fabric reinforcing shall not be used in dry cast products.

2.6 CURING

A. Cure units in a warm curing chamber approximately 100°F (37.8°C) at 95 percent relative humidity for approximately 12 hours, or cure in a 95-percent moist environment at a minimum 70°F (21.1°C) for 16 hours after casting. Additional yard curing at 95-percent relative humidity shall be 350 degree-days (i.e. 7 days @ 50°F (10°C) or 5 days @ 70°F (21°C)) prior to shipping. Form cured units shall be protected from moisture evaporation with curing blankets or curing compounds after casting.

B. Cure cast stone units in the forms for 16 to 20 hours after casting. Prevent loss of moisture from the units, and supply additional moisture and heat as required by environmental conditions. Continue curing after removal from the forms by moist or steam curing for a minimum of 48 hours unless otherwise approved. Maintain units above 50 degrees F during curing.

2.7 DELIVERY, STORAGE, AND HANDLING

A. Mark production units with the identification marks as shown in the shop drawings.

B. Package units and protect them from staining or damage during shipping and storage.

C. Provide an itemized list of products to support the bill of loading.

D. Handling: Lift and support cast stone units at design support points.

E. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

F. Store cementitious materials on elevated platforms, under cover, and in a dry

location. Do not use cementitious materials that have become damp.

PART 3 – EXECUTION

3.1 See Specification Section 040120 for installation requirements.

END OF SECTION 047200

SECTION 049300 - MASONRY RESTORATION CLEANING

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to work of this section.

1.2 QUALITY ASSURANCE

A. Do not apply materials if temperature is below 45°F or above 75°F. Comply with the manufacturer's printed instructions.

B. Use workers who are skilled and experienced in this type of work.

1.3 RELATED SECTIONS

A. Section 040120, Masonry Restoration.

1.4 SUBMITTALS

A. Submit manufacturer's specifications and literature for products furnished, including appropriate Material Safety Data Sheets (MSDS) and other safety requirements.

B. Submit list of 3 restoration cleaning projects similar in nature which have been successfully completed within the last 5 years, identified with project name, location and date.

C. Submit a certified statement issued by the restoration cleaning contractor attesting that:

1. Surfaces to receive the restoration cleaning system(s) have been inspected and found satisfactory to be cleaned.
2. The restoration cleaning system(s) is appropriate for the conditions.

1.5 QUALIFICATION OF WORKMEN

A. Provide at least one person who shall be present during execution of the work of this section and is thoroughly familiar with the specified requirement sand the materials and methods needed for their execution and who shall direct work performed under this section.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in original, new and unopened packages and containers bearing the name and label the manufacturer, trade name of product, lot number, shelf life or product, and mix ratio (if applicable). Do not deliver materials which have exceeded shelf life limitation set forth by the manufacturer.

B. Comply with manufacturer's printed instructions for storing and protecting materials.

1.7 PRODUCT QUALITY ASSURANCE

A. Company Field Advisor: Secure the services of a company field advisor from manufacturer of restoration cleaning products. Field advisor shall be certified in writing by the manufacturer to be technically qualified in installing the product(s). Personnel involved solely in sales do not qualify. Field advisor shall be present at the beginning of restoration cleaning and as required during duration of the project for the purpose of:

1. Rendering technical assistance to the Contractor regarding restoration cleaning products and procedures.
2. Providing specialized training in use of cleaning product(s) to the Contractor's personnel.
3. Verifying existing conditions, cleaning products and preparation procedures are suitable for specified restoration cleaning.
4. Verifying proper mixing proportions and procedures for the materials.
5. Verifying proper temperature and other environmental controls.
6. Verifying proper tools and cleaning procedures.
7. Verifying proper protection of cleaned surfaces.
8. Familiarizing the Contractor, Owner, and Engineer with all aspects of the restoration cleaning system.
9. Answering questions that may arise.
10. Preparing a written report summarizing information listed above. Report shall be submitted to the Contractor, Owner, and Engineer.
11. Contractor shall be responsible for field advisor's expenses.

B. Sample Panels: Prior to performing the work of this section, prepare a sample panel of not less than 6 square feet for each type of masonry restoration cleaning work required. Located sample panels on a portion of the existing masonry which is to be cleaned, at a location directed by the Architect or Engineer. Do not proceed further with the work until the sample panel has been accepted by the Architect or Engineer. Accepted sample panels will be used as quality standards for the work. Maintain accepted sample panels at site until the work is completed.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.

B. Brushes: Stiff nylon or fiber bristle only.

C. Cast Stone Cleaner (Rust stains): "Sure Klean Light Duty Concrete Cleaner" by Prosoco or accepted equivalent. Confirm product with cleaning manufacturer per 1.7A.

E. Brick Efflorescence Remover: “Sure Klean 600” by Prosoco or accepted equivalent. Confirm product with cleaning manufacturer per 1.7A.

F. Pressure Spray Equipment: Pressure feed type with nozzle tip suitable for pressures required for blast media.

G. Blast media: Corn cob specifically manufacturer for use as blast media:

1. Minimum diameter: 0.0167 inches.
2. Maximum diameter: 0.0393 inches.
3. Mesh: 30.
4. Hardness: 4.5.
5. Grit: 20/40.

H. See Section 040120, Masonry Restoration for additional information.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Examine conditions under which restoration cleaning shall be performed. Do not proceed with work until unsatisfactory conditions are corrected. Comply with provisions of Section 1.2 of this Specification Section and printed instructions of restoration cleaning material(s) manufacturer.

B. Test existing materials prior to removal for lead or other hazardous content. If found, contact Registered Design Professional and conform with environmental and safety regulations prior to proceeding.

C. The specified masonry cleaning products and procedures are for bidding purposes. The Contractor may submit an alternative masonry cleaning procedure for review. Acceptance for an alternate cleaning procedure will be determined upon review of test areas.

3.2 PREPARATION

A. Protect adjacent surfaces, materials, and work of other trades which are not being cleaned before, during, and after restoration cleaning. Protect building from streaking. Protect shrubs, landscaped and paved areas. In the event of damage, immediately make repairs and replacements necessary to the approval of the Owner and at no additional cost.

B. Protect windows, doors, and other openings with tarps and other means necessary.

C. Prepare surfaces to be cleaned in compliance with product manufacturer’s printed instructions and as specified.

3.3 STAIN REMOVAL AND CLEANING

A. General

1. Apply products in accordance with manufacturers printed recommendations.
2. Where cracks, spalls, delaminations, and other defects exist in the masonry, care shall be taken to minimize cleaning products and water entering the masonry. Contractor shall be responsible to repair any damage to the building caused by cleaning at no cost to the Owner.
3. Use of metal scrapers or brushes will not be permitted unless noted otherwise.

B. Remove staining from brick:

1. Apply approximately 1/8 thick coat of brick stain remover to a dry clean brick. Cover area with protective film. Allow brick stain remover remain on surface for 12 to 16 hours. The appropriate dwell period shall be determined through on-site sample conducted prior to full scale cleaning.
2. Remove protective film.
3. Rinse area with water using a garden hose. Immediately after rinse, apply masonry afterwash in accordance with manufactures printed recommendations. Allow masonry afterwash to remain on surface for minimum of 3 minutes.
4. Rinse area with water using a garden hose.
5. Collect effluent during rinsing operations and legally dispose off-site. Dilute effluent so pH is between 6 and 8.
6. Repeat as needed.
7. Test for pH at completion of cleaning.

C. Clean cast stone:

1. Prewet cast stone surface.
2. Apply cast stone cleaner to surface working from the bottom to the top.
3. Allow cast stone cleaner to remain on surface for 5 to 15 minutes. The appropriate dwell period shall be determined through on-site samples conducted prior to full scale cleaning.
4. Rinse thoroughly with water using a garden hose.
5. Collect effluent during rinsing operations and legally dispose off-site. Dilute effluent so pH is between 6 and 8.
6. Repeat as needed.
7. Test for pH at completion of cleaning.

D. Remove efflorescence from brick:

1. Prewet brick surface.

2. Apply diluted brick efflorescence remover to surface working from the bottom to the top. The appropriate dilution shall be determined through on-site samples conducted prior to full scale cleaning.
3. Allow brick efflorescence cleaner to remain on surface for 3 to 5 minutes. Do

not allow cleaner to dry on masonry surface.

4. Rinse thoroughly with water using a garden hose.
5. Collect effluent during rinsing operations and legally dispose off-site. Dilute effluent so pH is between 6 and 8.
6. Repeat as needed.
7. Test for pH at completion of cleaning.

END OF SECTION 049300

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel materials.
2. Shrinkage-resistant grout.
3. Shear stud connectors.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
2. Section 055000 "Metal Fabrications" for miscellaneous steel fabrications and other steel items not defined as structural steel.

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.

4. Anchor rods.
5. Threaded rods.
6. Shop primer.
7. Galvanized-steel primer.
8. Etching cleaner.
9. Galvanized repair paint.
10. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members not to be shop primed.

C. Delegated Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, Fabricator.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural-steel materials, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shear stud connectors.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.
3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Design connections and final configuration of member reinforcement at connections in accordance with ANSI/AISC 303 by fabricator's qualified professional engineer.

a. Use Allowable Stress Design; data are given at service-load level.

C. Moment Connections: Type FR, fully restrained.

D. Construction: Moment frame.

2.2 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M, ASTM A572/A572M, Grade 50

B. Channels, Angles, M-Shapes: ASTM A36/A36M, ASTM A572/A572M, Grade 50

C. Channels, Angles, S-Shapes: ASTM A36/A36M, ASTM A572/A572M, Grade 50.

D. Plate and Bar: ASTM A36/A36M

E. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C.

F. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with plain finish.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 490-1, compressible-washer type with plain finish.

C. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip zinc coating.
2. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with mechanically deposited zinc coating finish.

D. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.4 RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 55

1. Configuration: Straight.
2. Nuts: ASTM A563 heavy- hex carbon steel.
3. Plate Washers: ASTM A36/A36M carbon steel.
4. Washers: ASTM F436, Type 1, hardened carbon steel.
5. Finish: Plain.

B. Headed Anchor Rods: ASTM F1554, Grade 55, straight.

1. Nuts: ASTM A563 heavy- hex carbon steel.
2. Plate Washers: ASTM A36/A36M carbon steel.
3. Washers: ASTM F436, Type 1, hardened carbon steel.
4. Finish: Plain.

C. Threaded Rods: ASTM A36/A36M

1. Nuts: ASTM A63 heavy- hex carbon steel.
2. Washers: ASTM F436, Type 1, hardened carbon steel.
3. Finish: Plain.

2.5 PRIMER

A. Steel Primer:

1. Comply with Section 099123 "Interior Painting."
2. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.6 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.7 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 3.

F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.8 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened unless otherwise noted.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.9 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2. Galvanize lintels, shelf angles, and welded door frames attached to structural-steel frame and located in exterior walls.

2.10 SHOP PRIMING

A. Shop prime steel surfaces, except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces of high-strength bolted, slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces unless indicated to be painted.
6. Corrosion-resisting (weathering) steel surfaces.
7. Surfaces enclosed in interior construction.

B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:

1. SSPC-SP 3.

C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner or in accordance with SSPC-SP 16.

D. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates, Bearing Plates, and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened unless otherwise noted.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

C. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

3.5 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Priming: Cleaning and touchup priming are specified in Section 099600 "High-Performance Coatings."

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect and test bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

    a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

        1) Liquid Penetrant Inspection: ASTM E165/E165M.
        2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
        3) Ultrasonic Inspection: ASTM E164.
        4) Radiographic Inspection: ASTM E94/E94M.

3. Shear Stud Connectors: In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

    a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
    b. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

END OF SECTION 051200

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof deck.
2. Composite floor deck.
3. Noncomposite form deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Section 055000 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Roof deck.
2. Acoustical roof deck.
3. Composite floor deck.
4. Noncomposite form deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with SDI

QA/QC and the following welding codes:

1. AWS D1.1/D1.1M.
2. AWS D1.3/D1.3M.

B. FM Approvals' RoofNav Listing: Provide steel roof deck evaluated by FM Approvals and listed in its "RoofNav" for Class 1 fire rating and Class 1-60 windstorm ratings. Identify materials with FM Approvals Certification markings.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store products in accordance with SDI MOC3. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck in accordance with AISI S100.

B. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.

2.2 ROOF DECK

A. Manufacturers: Subject to compliance with requirements, available manufacturers

offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Canam Buildings US Inc.; Canam Group Inc.
2. Epic Metals Corporation
3. New Millennium Building Systems, LLC
4. Vulcraft Group; a division of Nucor Corp.

B. Fabrication of Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI RD and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Deck Profile: As indicated.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: As indicated.
6. Side Laps: Overlapped.

2.3 COMPOSITE FLOOR DECK

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Canam Buildings US Inc.; Canam Group Inc.
2. Epic Metals Corporation
3. New Millennium Building Systems, LLC
4. Vulcraft Group: division of Nucor Corp.

B. Fabrication of Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with SDI C, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: As indicated.

2.4 NONCOMPOSITE FORM DECK

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Canam Buildings US Inc.; Canam Group Inc.
2. Epic Metals Corporation
3. New Millennium Building Systems, LLC
4. Vulcraft Group; a division of Nucor Corp.

B. Fabrication of Noncomposite Form Deck: Fabricate ribbed-steel sheet noncomposite deck panels used as a form to comply with SDI NC, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Deck Profile: As indicated.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: As indicated.
6. Side Laps: Overlapped.

2.5 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI standards for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.

I. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

J. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

K. Galvanizing Repair Paint: ASTM A780/A780M.

L. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories in accordance with SDI C, SDI NC, and SDI RD, as applicable; manufacturer's written instructions; and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install in accordance with deck manufacturer's written instructions.

J. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

3.3 INSTALLATION OF ROOF DECK

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: 5/8 inch, nominal.
2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds as indicated.

3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.

1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.

E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels in accordance with deck manufacturer's written instructions. Mechanically fasten to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive in accordance with manufacturer's written instructions to ensure complete closure.

3.4 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 5/8 inch, nominal.
2. Weld Spacing:

a. Space and locate welds as indicated.

3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Butted.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure in accordance with SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, in accordance with SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.5 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint in accordance with ASTM A780/A780M and manufacturer's written instructions.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections:

1. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck in accordance with quality-assurance inspection requirements of SDI QA/QC.

a. Field welds will be subject to inspection.

2. Steel decking will be considered defective if it does not pass tests and inspections.

3. Shear Stud Connectors: In addition to visual inspection, test and inspect field-welded shear connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:

a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors that are already tested.

C. Prepare test and inspection reports.

END OF SECTION 053100

SECTION 054000 – COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Exterior non-load bearing steel stud framing.

B. Related Sections include the following:

1. Division 05 Section "Metal Fabrications" for masonry shelf angles and connections and miscellaneous steel framing.
2. Division 05 Section “Cold Formed Metal Trusses” for truss framing.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated on Structural Drawings.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
   a. Non-Load Bearing Studs for Masonry Veneers: Horizontal deflection of 1/600 of the horizontally projected span.
   b. Non-Load Bearing Studs at Other Materials: Horizontal deflection of 1/360 of the horizontally projected span.

3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F (67 deg C).

B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

C. Cold-Formed Steel Framing Design Standards:

1. Wall Studs: AISI S211.
2. Headers: AISI S212.
3. Lateral Design: AISI S213.

D. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

1.3 SUBMITTALS

A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the professional engineer licensed in the State of New York, who is responsible for their preparation.

C. Welding certificates.

D. Qualification Data: For professional engineer.

E. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Vertical deflection clips.
6. Horizontal drift deflection clips
7. Miscellaneous structural clips and accessories.

F. Research/Evaluation Reports: For cold-formed metal framing.

1.4 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional engineer who is licensed in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

C. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

D. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

E. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

F. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."

G. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

1. ClarkDietrich Building Systems.
2. MarinoWare; a division of Ware Industries.
3. Super Stud Building Products, Inc.

2.2 MATERIALS

A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: ST33H (ST230H) and ST50H (ST340H) as required by structural performance.
2. Coating: G60 (Z180).

2.3 EXTERIOR AND INTERIOR NON LOAD BEARING WALL FRAMING

A. Built-up Members: Built-up members of manufacturer's standard C-shaped steel section, with stiffened flanges, nested into a U-shaped steel section joist track, with unstiffened flanges; unpunched; of web depths indicated; and as follows:

1. Minimum Base-Metal Thickness: 16 gauge minimum, unless otherwise indicated Drawings.

2. Flange Width: 1-5/8 inches (41 mm), minimum.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Gusset plates.
7. Hole reinforcing plates.
8. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts headless, hooked bolts headless bolts, with encased end threaded, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C mechanically deposition according to ASTM B 695, Class 50.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035

B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.

D. Shims: Load bearing, high-density multimonomer plastic, nonleaching.

E. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

F. Spray Foam Insulation/Sealer: Low expansion type, recommended by manufacturer for intended use.

2.7 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.

B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

C. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

3.3 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:

1. Stud Spacing: 16 inches (406 mm).

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure as required on Drawings to prevent transfer of vertical loads while providing lateral support.

1. Install single-leg deflection tracks and anchor to building structure.
2. Install double deep-leg deflection tracks and anchor outer track to building structure.
3. Connect vertical deflection clips to studs and anchor to building structure.
4. Connect drift clips to cold formed metal framing and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches (1220 mm) apart. Fasten at each stud intersection.

1. Install additional row of horizontal bridging in curtain wall stud beneath deflection track when curtain wall studs are not fastened to an additional top track.
2. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system

3.5 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds and screw connections will be subject to testing and inspecting.

C. Testing agency will report test results within 24 hours and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

F. Inspect all prefabricated trusses before installation.

3.6 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 054400 - COLD-FORMED METAL TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-formed steel trusses.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for cold-formed steel studs, joists, and rafters.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel trusses; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

C. Delegated Design Submittals: For cold-formed steel trusses, including analysis data signed and sealed by the qualified professional responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Miscellaneous structural clips and accessories.

C. Qualification Statements: For fabricator.

D. Delegated Design Engineer Qualifications: For cold-formed steel trusses.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the type indicated.

C. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

D. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

1. AWS D1.1/D1.1M.
2. AWS D1.3/D1.3M.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel trusses.

B. Structural Performance: Provide cold-formed steel trusses capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated on Drawings.
2. Deflection Limits: Design trusses to withstand design loads without deflections greater than the following:

    a. Floor Trusses: Vertical deflection of 1/480 for live loads and l/360 for total loads of the span.
    b. Roof Trusses: Vertical deflection of 1/240 of the span.

3. Design trusses to provide for movement of truss members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.

C. Seismic Performance: Cold-formed steel trusses to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7 and AISI S400.

D. Cold-Formed Steel Truss Standards: Unless more stringent requirements are indicated, trusses comply with AISI S100 and AISI S240.

E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Product iQ" or from the listings of another qualified testing agency acceptable to authorities having jurisdiction.

F. Sound-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, in accordance with ASTM E90 and classified in accordance with ASTM E413 by an independent testing agency.

2.2 COLD-FORMED STEEL TRUSSES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Alpine TrusSteel; an ITW company
2. MiTek Industries, Inc.

B. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:

1. Grade: ST33H.
2. Coating: G60, A60, AZ50, or GF30.

2.3 COLD-FORMED STEEL ROOF TRUSSES

A. Roof Truss Members: Manufacturer's standard steel sections.

1. Connecting Flange Width: 1-5/8 inches minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2. Minimum Base-Metal Thickness: 0.0428 inch

2.4 COLD-FORMED STEEL FLOOR TRUSSES

A. Floor Truss Members: Manufacturer's standard steel sections.

1. Connecting Flange Width: 1-5/8 inches, minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2. Minimum Base-Metal Thickness: 0.0428 inch.

2.5 TRUSS ACCESSORIES

A. Fabricate steel-truss accessories from steel sheet, ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for truss members.

B. Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.

2.6 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process in accordance with ASTM A123/A123M.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process in accordance with ASTM A153/A153M, Class C.

C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58, or ICC-ES AC308 as appropriate for the substrate.

1. Uses: Securing cold-formed steel trusses to structure.
2. Type: Torque-controlled adhesive anchor or adhesive anchor.

D. Power-Actuated Fasteners: Fastener systems with working capacity greater than or equal to the design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.7 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780/A780M.

B. Shims: Load-bearing, high-density multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as truss members supported by shims.

2.8 FABRICATION OF COLD-FORMED STEEL TRUSSES AND ACCESSORIES

A. Fabricate cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened, in accordance with referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate trusses using jigs or templates.
2. Cut truss members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel truss members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

4. Fasten other materials to cold-formed steel trusses by welding, bolting, pneumatic pin fastening, or screw fastening, in accordance with Shop Drawings.

B. Reinforce, stiffen, and brace trusses to withstand handling, delivery, and erection stresses. Lift fabricated trusses by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 ft. and as follows:

1. Spacing: Space individual truss members no more than plus or minus 1/8 inch from plan location. Cumulative errors are not to exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel truss to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, conditions, and abutting trusses and framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.

B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed steel trusses without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.

3.3 INSTALLATION OF COLD-FORMED STEEL TRUSSES

A. Install bridge, and brace cold-formed steel trusses in accordance with AISI S200, AISI S202, AISI S214, and manufacturer's written instructions unless more stringent requirements are indicated.

1. Coordinate with wall framing to align webs of bottom chords and load-bearing studs or continuously reinforce track to transfer loads to structure.
2. Anchor trusses securely at all bearing points.
3. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings and designed in accordance with CFSEI's Technical Note 551e, "Design Guide: Permanent Bracing of Cold-Formed Steel Trusses."

B. Install cold-formed steel trusses and accessories true to line and location, and with connections securely fastened.

1. Erect trusses with plane of truss webs plumb and parallel to each other. Align and accurately position trusses at required spacings.
2. Erect trusses without damaging truss members or connections.
3. Fasten cold-formed steel trusses by welding or mechanical fasteners.

    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

    b. Locate mechanical fasteners, install in accordance with Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

C. Install temporary bracing and supports to secure trusses and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to trusses are secured.

D. Truss Spacing: As indicated on Drawings.

E. Do not alter, cut, or remove truss members or connections of trusses.

3.4 ERECTION TOLERANCES

A. Install cold-formed steel trusses level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 ft. and as follows:

1. Space individual trusses no more than plus or minus 1/8 inch from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.

3.5 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel trusses with galvanized repair paint in accordance with ASTM A780/A780M and manufacturer's written instructions.

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Cold-Formed Steel Trusses Spanning 60 Ft. (18 288 mm) or Longer: Verify temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Cold-formed metal trusses will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.7 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel trusses are without damage or deterioration at time of Substantial Completion.

END OF SECTION 054400

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Steel ladder.
2. Aluminum ships ladder.
3. Steel stairs with concrete-filled treads and platforms.
4. Handrails and railings at stairs and ramps.
5. Handrails attached to walls adjacent to stairs and ramps.
6. Guardrails, including guardrails at exterior locations.
7. Gates in stairways
8. Support angles for elevator door sills.
9. Loose bearing and leveling plates.
10. Loose steel lintels.
11. Shelf angles.
12. Steel framing and supports for ceiling hung equipment, ceiling hung curtains, and other items indicated on Drawings.
13. Steel framing and supports for mechanical and electrical equipment.
14. Steel framing and supports for part height partitions.
15. Steel framing and supports for applications where framing and supports are not specified in other Sections.
16. Steel elevator sump pit gratings.
17. Aluminum pencil-proof bar gratings.
18. Cast metal nosings at concrete stairs.
19. Elevator hoistway beam and safety beam.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal stairs, handrails and railings, and guardrails.

B. Structural Performance of Metal Stairs, Walkways and Platforms: Provide metal stairs, walkways and platforms capable of withstanding the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each component of metal stairs, walkways and platforms.

1. Treads and Platforms of Metal Stairs, and Walkways: Capable of withstanding a uniform load of 100 lbf/sq. ft. (4.79 kN/sq. m) or a concentrated load of 300 lbf (1.33 kN) on an area of 4 sq. in. (25.8 sq. cm), whichever produces the greater stress.
2. Stair and Walkway Framing: Capable of withstanding stresses resulting from loads specified above in addition to stresses resulting from railing system loads.

3. Limit deflection of treads, platforms, walkways and framing members to L/360 or 1/4 inch (6.4 mm), whichever is less.

C. Structural Performance of Handrails and Railings: Provide handrails and railings capable of withstanding the following structural loads without exceeding the allowable design working stress of materials for handrails, railings, anchors, and connections:

1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
   a. Concentrated load of 200 lbf (890 N) applied at any point and in any direction.
   b. Uniform load of 50 lbf/ft. (730 N/m) applied horizontally and concurrently with uniform load of 100 lbf/ft. (1460 N/m) applied vertically downward.
   c. Concentrated and uniform loads above need not be assumed to act concurrently.

2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
   a. Concentrated load of 200 lbf (890 N) applied at any point and in any direction.
   b. Uniform load of 50 lbf/ft. (730 N/m) applied in any direction.
   c. Concentrated and uniform loads above need not be assumed to act concurrently.

3. Infill Area of Guards: Capable of withstanding a horizontal concentrated load of 200 lbf (890 N) applied to 1 sq. ft. (0.09 sq. m) at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.
   a. Load above need not be assumed to act concurrently with loads on top rails in determining stress on guards.

1.3 ACTION SUBMITTALS

A. Product Data: For all fabricated products including the following:

1. Gratings.
2. Paint products.
3. Grout.
4. Nonslip aggregates and nonslip-aggregate surface finishes
5. Ladders
6. Nosings.
7. Ships ladder

B. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Verification: Sample of the following:

1. 6" square piece of each type of bar grating.
2. Each type of stainless steel finish on 6" long piece of each type of metal shape.
3. 6" long fabricated stainless steel handrail.

1.4 INFORMATIONAL SUBMITTALS

A. Welding Certificates: Copies of certificates for welding procedures and personnel.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Delegated-Design Submittal: For stairs, handrails and railings, and guardrails including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal stairs, platforms, walkways, handrails and railing systems that are similar to those indicated for this Project in material, design, and extent.

C. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.3, "Structural Welding Code--Sheet Steel."
3. AWS D1.2, "Structural Welding Code--Aluminum."
4. AWS D1.6, "Structural Welding Code--Stainless Steel."
5. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Mockups, Railings and Handrails: Build mockups of each type of handrail, railing and guardrail system to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Each mock-up shall consist of a typical panel including two posts, top rail, infill area, and anchorage system components that are full height and are not less than 24 inches (600 mm) in length.
2. Notify Architect seven days in advance of dates and times when mock-up will be constructed

3. Remove/dismantle and reprepare mock-up as required to obtain Architect's approval.
4. Approved mock-ups may be incorporated in the finished work.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.8 SEQUENCING AND SCHEDULING

A. Sequence and coordinate installation of wall handrails as follows:

1. Mount handrails only on completed walls. Do not support handrails temporarily by any means not satisfying structural performance requirements.
2. Mount handrails only on gypsum board assemblies reinforced to receive anchors, and where the location of concealed anchor plates has been clearly marked for benefit of Installer.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating.

C. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads. For exterior installations and where indicated, provide pipe with hot-dip galvanized coating.

D. Slotted Channel Framing: Cold-formed metal channels with flange edges returned toward web and with 9/16-inch- (14.3-mm-) wide slotted holes in webs at 2 inches (51 mm) o.c.

1. Width of Channels: 1-5/8 inches (41 mm).
2. Depth of Channels: As indicated.
3. Metal and Thickness: Galvanized steel complying with ASTM A 653/A 653M, structural quality, Grade 33 (Grade 230), with G90 (Z275) coating; 0.108-inch (2.8-mm) nominal thickness.
4. Finish: Unfinished.

E. Steel Bars for Gratings: ASTM A 36/A 36M.

F. Wire Rod for Grating Crossbars: (ASTM A 510M)

G. Malleable-Iron Castings: ASTM A 47, Grade 32510 (ASTM A 47M, Grade 22010).

H. Gray-Iron Castings: ASTM A 48, Class 30 (ASTM A 48M, Class 200), unless another class is indicated or required by structural loads.

I. Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 (ASTM A 47M) malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

J. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.3 STAINLESS STEEL

A. Tubing: ASTM A 554, Grade MT 304

B. Pipe: ASTM A 312/A 312M, Grade TP 304

C. Castings: ASTM A 743/A 743M, Grade CF 8 or CF 20.

D. Plate and Sheet: ASTM A 666, Type 304

2.4 ALUMINUM

A. Extruded Bars, Shapes and Mouldings: ASTM B 221 (ASTM B 221M), alloy 6063-T6 or 6063-T52.

B. Castings: ASTM B 26, Almag 35.

2.5 PAINT

A. Shop Primer for Interior Ferrous Metal: Modified oil-alkyd primer, Tnemec 88-559 or 10-1009, or equivalent. Primer shall be compatible with finish paint specified in Section 099100.

B. Shop Primer for Galvanized Ferrous Metal: Polyamide epoxy primer, Tnemec F.C. Typoxy Series 27, or equivalent. Primer shall be compatible with finish paint specified in Section 099100.

C. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

D. Shop Primer for Exterior Ferrous Metal: Organic zinc-rich primer, complying with SSPC-Paint 20 and compatible with topcoat; Tneme-Zinc 90-97; Tnemec Company, Inc.

E. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

2.6 FASTENERS

A. General: Provide Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls, except as noted below. Select fasteners for type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Anchor Bolts: ASTM F 1554, Grade 36.

D. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).

E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

F. Wood Screws: Flat head, carbon steel, ASME B18.6.1.

G. Plain Washers: Round, carbon steel, ASME B18.22.1 (ASME B18.22M).

H. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1 (ASME B18.21.2M).

I. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Material: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as needed.

2.7 GROUT

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.8 CONCRETE FILL

A. Concrete Materials and Properties: Normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa), unless higher strengths are indicated.

2.9 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Shear and punch metals cleanly and accurately. Remove burrs.

C. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

G. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

H. Allow for thermal movement resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening up of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

I. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

J. Remove sharp or rough areas on exposed traffic surfaces.

K. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

2.10 ROUGH HARDWARE

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.11 METAL STAIRS

A. General: Construct stairs to conform to sizes and arrangements indicated. Join pieces together by welding, unless otherwise indicated. Provide complete stair and bleacher assemblies, including metal framing, hangers, struts, clips, brackets, bearing plates, and other components necessary for the support of stairs, and platforms, and as required to anchor, hang, and contain the stairs on the supporting structure.

B. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," for class of stair designated, unless more stringent requirements are indicated.

1. Commercial class.

C. Stair Framing: Fabricate stringers of structural steel channels, or plates, or a combination thereof, as indicated. Provide closures for exposed ends of stringers. Construct platforms of structural steel channel headers and miscellaneous framing members as indicated. Weld headers to strings, and framing members to strings and headers.

1. Where required, provide hanger rods to support landings from floor construction above. Locate hanger rods within stud space of shaft-wall construction.
2. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

D. Metal Risers, Subtread Pans, and Subplatforms: Form to configurations shown from steel sheet of thickness necessary to support indicated loads, but not less than 0.0677 inch (1.7 mm).

1. Steel Sheet: Uncoated cold-rolled steel sheet, unless otherwise indicated.
2. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
3. Shape metal pans to include nosing integral with riser.

E. Steel Stair Finishes:

1. Provide hot-dipped galvanized finish for all components of exterior stair and platform system including fittings, brackets, anchors, fasteners, and sleeves
2. Shop prime and field paint all steel stairs systems

2.12 HANDRAILS AND RAILINGS AND GUARDRAILS

A. General: Fabricate handrails and railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.

B. Interconnect members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.

1. At tee and cross intersections of pipe and tube, cope ends of intersecting members to fit contour of tube to which end is joined, and weld all around.

C. Form changes in direction of handrails and rails as detailed.

D. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of pipe and tube handrail and railing members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns, unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

G. Provide swinging gates to match railing/guard construction, complete with self-closing spring hinges and lockset or panic device where indicated.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting railings and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

1. Connect railing posts to metal framing by direct welding, unless otherwise indicated.
2. Connect railing posts to concrete by inserting into preset sleeves, attaching to floor brackets, or core drilling, as indicated.

I. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

J. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

K. For railing posts set in concrete, provide steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (13 mm) greater than outside dimensions of post, with steel plate forming bottom closure.

L. For galvanized handrails and railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.

M. For nongalvanized handrails and railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.

N. Steel Handrail and Railing Finishes:

1. Provide non-galvanized finish for steel components of interior steel railings and handrails. Provide nongalvanized ferrous metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in masonry and concrete construction.
2. Provide hot-dipped galvanized finish for all components of exterior steel handrail and railing system including fittings, brackets, anchors, fasteners, and sleeves.
3. Shop prime and field paint all steel handrails and railings.

O. Stainless Steel Handrail Finishes: No. 4.

2.13 STEEL LADDERS

A. General: Fabricate ladders for locations shown, with dimensions, spacings, details, and anchorages as indicated.

1. Comply with ANSI A14.3, except for elevator pit ladders.
2. For elevator pit ladders, comply with ASME A17.1/CSA B44.

B. Siderails: Continuous, 1/2-by-2-1/2-inch (12-by-64-mm) steel flat bars, with eased edges, spaced 18 inches (457 mm) apart.

C. Bar Rungs: 3/4-inch- (19-mm-) diameter steel bars, spaced 12 inches (300 mm) o.c.

D. Fit rungs in centerline of side rails; plug-weld and grind smooth on outer rail faces.

E. Support each ladder at top and bottom and not more than 60 inches (1500 mm) o.c. with welded or bolted steel brackets. Size brackets to support design loads specified in ANSI A14.3.

F. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.

G. Galvanize ladders, including brackets and fasteners, in the following locations:

1. Exterior.
2. Interior, where indicated.

2.14 ALUMINUM SHIPS LADDER

A. Fabricate aluminum ships ladders of open-type construction with channel stringers, continuous pipe railings, and extruded serrated treads. Provide brackets and fittings for installation

1. Angle of Inclination: 75 degrees.
2. Stringers: 2" x 6" x 1/8" extruded channels.
3. Handrails: 1.666" dia. Schedule 40 pipe.
4. Treads: Extruded serrated treads 4-1/8" d x 1-1/4" h.
5. Product: Provide Model 523 Ship Ladder with Access to Roof Hatch manufactured by O'Keeffe's Inc. or equal.
6. Finish: Aluminum mill finish.

2.15 METAL GRATINGS

A. Metal Bar Gratings: Form to configurations shown from metal bar grating; fabricate to comply with NAAMM MBG 531, "Metal Bar Grating Manual"

1. Steel Gratings: Fabricate from welded steel grating with 1-1/4-by-3/16-inch (32-by-5-mm) bearing bars at 15/16 inch (24 mm) o.c. and crossbars at 4 inches (100 mm) o.c., NAAMM designation: W-15-4 (1-1/4 x 3/16) STEEL. Surface shall be smooth.

a. Application: Elevator pit sump pit cover.

2. Aluminum Pencil Proof Linear Bar Grille/Diffuser: Extruded aluminum 7/32" fixed bars at 7/16" spacing, zero degree deflection. Bars shall be fixed and parallel in the long direction. Provide in 6 ft lengths. Provide end borders and mitered corners as required to close off ends.
   a. Basis of Design Product: Model CT-PP-0 by Titus or equal.
   b. Toe Kick Grille: Provide combination Type C1 and C5 frame and border with loose angles and cam nuts, no base flange.
   c. Top Surface Grille: Provide Type 2 frame and border (3/4" border).
   d. Finish: Black powder coat.
   e. Application: Unit cabinet heaters./fin tube covers

B. Steel Frames: Fabricate from ASTM A 36/A 36M steel angle, 1-1/2" x 1-1/2" x 1/4" in size unless otherwise noted, with welded anchor for casting into slab.

C. Fabricate grating with steel angle or steel plate carrier at each end for attachment to frame. Secure grating to frame with removable bolts; provide tamper proof bolts for exterior locations.

D. Do not notch bearing bars at supports to maintain elevation

E. Steel Grating Finishes:

1. Provide hot-dipped galvanized finish for all components of elevator pit gratings including fittings, brackets, anchors, fasteners, and sleeves.
2. Provide hot-dipped galvanized finish for all steel frames for gratings.
3. Shop prime and field paint all steel gratings and steel framing members.

F. Aluminum Grating Finishes: As specified for each application

2.16 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates after fabrication.

2.17 LOOSE STEEL LINTELS

A. Fabricate loose structural-steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Size loose lintels to provide bearing length at each side of openings equal to one-twelfth of clear span, but not less than 8 inches (200 mm), unless otherwise indicated.

D. Galvanize loose steel lintels located in exterior walls.

E. Shop prime and field paint all lintels, leave embedded portions of lintels unpainted.

2.18 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch (19-mm) bolts, spaced not more than 6 inches (150 mm) from ends and 24 inches (600 mm) o.c., unless otherwise indicated.

B. Galvanize shelf angles to be installed in exterior walls.

C. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.19 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports that are not a part of structural-steel framework as necessary to complete the Work.

B. Fabricate units from structural-steel shapes, plates, tubes, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Fabricate units from slotted channel framing where indicated.
2. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors 1-1/4 inches (32 mm) wide by 1/4 inch (6 mm) thick by 8 inches (200 mm) long at 24 inches (600 mm) o.c., unless otherwise indicated.
3. Furnish inserts if units must be installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated, and in exterior locations.

2.20 CAST NOSINGS

A. Fabricate units of cast aluminum in sizes and configurations indicated and in lengths necessary to accurately fit openings or conditions. Provide units with an integral abrasive finish consisting of aluminum oxide, silicon carbide, or a combination of both.

B. Configurations: Provide units in the following configurations, unless otherwise indicated:

1. Nosings: Cross-hatched units, 4 inches (100 mm) wide with 1-inch (25-mm) lip, for casting into concrete steps.

C. Provide anchors for embedding units integral in concrete.

D. Apply bituminous paint to concealed bottoms, sides, and edges of units set into concrete.

E. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Safety Tread Co., Inc.
2. Amstep Products.
3. Safe-T-Metal Co.
4. Wooster Products Inc.

F. Application: Use at cast-in-place concrete stairs.

2.21 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.22 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware..

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes indicated as unpainted, and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Paint embedded steel that is partially exposed on exposed portions and initial 2 inches of embedded areas only.

1. Do not paint surfaces to be welded or high-strength bolted with friction-type connections.
2. Apply 2 coats of paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

D. Powder Paint: Manufacturer’s standard process, in color selected by Architect.

2.23 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

C. Powder Paint: Manufacturer's standard process., in color selected by Architect.

2.24 STAINLESS-STEEL FINISHES

A. Remove tool and die marks and stretch lines or blend into finish.

B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

C. Directional Satin Finish: No. 4.

D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.2 INSTALLING METAL STAIRS WITH GROUTED BASEPLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of baseplates.

B. Set steel stair baseplates on wedges, shims, or leveling nuts. After stairs have been positioned and aligned, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

1. Use nonmetallic, nonshrink grout, unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.3 INSTALLING RAILINGS AND HANDRAILS

A. Adjust handrails and railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and railing ends to building construction as follows:

1. Anchor posts to steel by welding directly to steel supporting members.
2. Use steel pipe sleeves preset and anchored into concrete for installing posts where indicated. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8-inch (3-mm) buildup, sloped away from post.
3. Where indicated, core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions
4. Cover anchorage joint of post with flange of same metal as post where indicated.
5. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with postinstalled anchors and bolts.
6. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.

B. Attach handrails to wall with wall brackets. Provide bracket with 1-1/2-inch (38-mm) clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as follows:

1. Use type of bracket with predrilled hole for exposed bolt anchorage.

2. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
3. For hollow masonry anchorage, use toggle bolts.
4. For steel-framed gypsum board assemblies, use hanger or lag bolts set into wood backing between studs. Coordinate with stud installation to locate backing members

3.4 SETTING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings, if any.

B. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.

1. Where grout space under bearing plates is indicated at girders supported on concrete or masonry, install as specified above for setting and grouting bearing and leveling plates.

3.6 INSTALLING NOSINGS

A. Install with anchorage system indicated to comply with manufacturer's written instructions.

B. Center nosings on tread widths.

C. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.

D. Seal thresholds exposed to exterior with elastomeric sealant complying with Division 07 Section "Joint Sealants" to provide a watertight installation.

3.7 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

SECTION 055201 –EXTERIOR METAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel pipe and tube railings.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:

1. Steel: 72% of minimum yield strength.
2. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.

C. Structural Performance: Railings shall withstand the effects of gravity loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:
   a. Uniform load of 50 lbf/ft. applied in any direction.
   b. Concentrated load of 200 lbf applied in any direction.
   c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Infill of Guards:
   a. Concentrated load of 50 lbf applied horizontally on an area of 1sq. ft.
   b. Infill load and other loads need not be assumed to act concurrently.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.3 ACTION SUBMITTALS

A. Submit the following product data:

1. Manufacturer’s product lines of mechanically connected railings.
2. Railing brackets.
3. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: Submit products involving selection of color, texture, or design, including mechanical finishes on stainless steel.

D. Samples for Verification: For each type of exposed finish required.
   1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
   2. Handrail to post and handrail to handrail joint assembly.
      a. Show method of finishing and connecting members at intersections.
   3. Fittings and brackets.

E. Delegated-Design Submittal: Provide delegated design submittal for installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification data for qualified professional engineer.

B. Mill Data: Certificates signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

C. Welding certificates.

D. Paint Compatibility Data: Certificates from manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

E. Product Test Reports: Reports based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing from a single source from single manufacturer.

B. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, “Structural Welding Code – Steel”.
   2. AWS D1.6, “Structural Welding Code – Stainless Steel”.

C. Laboratory Test - TGIC-Polyester Powder Coating: Contractor shall retain a testing agency to conduct independent test for the TGIC - polyester powder coating. A sample of the TGIC - polyester powder coated handrail shall be laboratory tested for bonding of the powder coating to the metal. The test shall be the Cross Hatch test per ASTM D3359, method B. Failure to satisfactorily pass this test shall be a basis for rejection.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication. Indicate measurements on shop drawings. Coordinate fabrication schedule with construction process to avoid delaying the work.

1.7 COORDINATION AND SCHEDULING

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers’ written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in

concrete or masonry. Deliver such items to Project site in time for installation.

C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Steel pipe and tube railings.
   a. Pisor Industries, Inc.
   b. Wagner, R & B, Inc.; a division of the Wagner Companies.

2.2 METALS

A. Metal Surfaces - General: Provide materials with smooth surfaces without seam or roller marks, rolled trade names, stains, discolorations, or blemishes. All materials required for a complete and proper installation shall be new, free from rust, first quality of their respective kinds. Steel pipe and tubing scheduled to be hot-dipped galvanized shall be mill ordered uncoated.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Woven Wire Mesh: Intermediate-crimp, square pattern, 2-inch woven wire mesh, made from 0.135-inch nominal diameter wire complying with ASTM A 510.

2.4 FASTENERS

A. General: Provide the following:

1. Ungalvanized Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
2. Hot Dipped Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Interconnecting Railing Component Fasteners: Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.

D. Post Installed Anchors: Torque-controlled expansion or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in

concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 2 (A4) stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.5 MISCELLANEOUS METALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
   1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
C. Shop Primers: Provide primers that comply with Division 09 Painting Sections.
D. Universal Shop Primer: Fast-curing, lead and chromate free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and with a compatibility to provide a sound foundation for field-applied topcoats despite prolonged exposure. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
E. Primer for Galvanized Steel: Zinc-dust, zinc-oxide primer formulated for priming zinc-coated steel and for compatibility with finish paint systems indicated, and complying with SSPC-Paint 5. For intermediate and topcoats, provide products that comply with Division 09 painting Sections.
F. Non-Shrink Non-Metallic Grout: Factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
G. Anchoring Cement: Factory packaged, non-shrink, non-staining, hydraulic controlled expansion cement formulation for mixing with water at the project site to create pourable anchoring, patching, and grouting compound. At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for the design, dimensions, member sizes, member spacing, details, finish, and anchorage, but not less than that required to support structural loads.
B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation. Use connections that maintain structural value of joined pieces.
C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
G. Connections: Fabricate railings with welded connections unless otherwise indicated.
H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
    1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
    2. Obtain fusion without undercut or overlap.
    3. Remove flux immediately.
    4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and so that welded surface matches contours of adjoining surfaces.
I. Form changes in direction as detailed and by bending.
J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
K. Close exposed ends of railing members with prefabricated end fittings.
L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is ¼ inch or less.
M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads by railings. Coordinate anchorage devices with supporting structure.
O. For railing posts set in concrete, provide stainless-steel sleeves not less than 6 inches long with inside dimensions not less than ½ inch greater than the outside dimensions of the post, with metal plate forming bottom closure.
P. For removable railing posts, fabricate slip-fit sockets from stainless-steel tube or pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of the post height. Provide socket covers designed and fabricated to resist being dislodged.
    1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.
Q. Woven-Wire Mesh Infill Panels: Fabricate infill panels from woven-wire mesh crimped into 1-by-1/2-by-1/8-inch metal channel frames. Make wire mesh and frames from same metal as railings in which they are installed.
R. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.03 GENERAL FINISHES
A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal

Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.04 STEEL AND IRON FINISHES

A. Galvanized Railings: Work and materials to comply with the following:
   1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
   2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
   3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
   4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
   5. Fill vent and drain holes that will be exposed in the finished work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. Galvanized Handrail:
   1. All posts and rails shall be galvanized steel pipe in accordance with ASTM Designation A501, standard specification for hot-formed welded and seamless carbon steel structural tubing.
   2. Vertical pipe posts and top rail shall be schedule 40, 2-inch nominal dimension.
   3. All materials as delivered shall be in condition for erection without field fitting or cutting.

C. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

D. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

E. For non-galvanized steel railings, provide non-galvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.

F. Shop Priming Preparation: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
   1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning".
   2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning".
   3. Railings Indicated to Receive Primers Specified in Division 09 Section "High Performance Coatings": SSPC-SP 3, "Commercial Blast Cleaning".
   4. Other Railings: SSPC-SP 3, "Power Tool Cleaning".

G. Handrail Powder Coating: TGIC-polyester powder coating shall be applied to the galvanized steel in such a manner that the coating will not peel off. The TGIC-polyester powder coating shall be applied at a film thickness of 3 to 6 mils by electrostatic spray process and bake finished per manufacturer's directions. The TGIC-polyester shall be

applied without voids, tears or cuts that reveal the substrate and shall thoroughly adhere to the metal without peeling when scratched with a pick device or knife blade point. Remove loose rust, mill scale and spatter, and slag or flux deposits in accordance with paint manufacturer's instructions. For steel to be galvanized then primed, clean galvanized surface to remove all oxidation in accordance with SSPC-SP7 "Brush-Off Blast Cleaning."

1. Color shall be black.

H. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, “Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel,” for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

1. Shop prime uncoated railings with universal shop primer unless zinc-rich primer is indicated.
2. Do not apply primer to galvanized surfaces.

2.05 MISCELLANEOUS MATERIALS

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed ¼ inch in 12 feet.

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fasten to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Non-Welded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in “Fabrication” Article whether welding is performed in the shop or in the field.

C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond the joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.3 ANCHORING POSTS

A. Form or core-drill holes not less than 8 inches deep and ¾ inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, non-metallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer’s written instructions.

B. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.

C. Install removable railing where indicated, in slip-fit metal sockets cast in concrete.

3.4 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and connected to railing ends using non-welded connections.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and connected to railing ends using non-welded connections.

C. Attach railings to wall with wall brackets, except where end flanges are used. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

1. Use type of bracket with pre-drilled hole for exposed bolt and anchorage.
2. Locate brackets as indicated, or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets and railing end flanges to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For hollow masonry anchorage, use toggle bolts.

3.5 ADJUSTING AND CLEANING

A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

B. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. Leave neat edge and square where existing material is cut to adjoin new work.

D. Touch-up Painting: Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09

painting Sections.

E. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.6 PROTECTION

A. Protect railing finishes from damage during construction with temporary protective coverings. Remove protective coverings when complete.

END OF SECTION 055200

SECTION 061000 - ROOF CARPENTRY

PART 1 - GENERAL

1.1 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.2 DESCRIPTION OF WORK

A. The work of this Section consists of the following:

All plant, labor, materials, equipment, testing and services necessary to complete the roof related carpentry work shown on the drawings, schedules and notes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Roof related wood nailers, blocking, shims, plywood, and fascia boards.

2. Light gauge metal framing.

3. Re-secure existing roof related blocking.

B. Related Sections:

1.	Masonry Maintenance	040100
2.	Asphalt Shingles	073113
3.	EPDM Roofing	075323
4.	Sheet Metal Flashing & Specialties	076200
5.	Roof Accessories	077200

C. QUALITY ASSURANCE

1. Installer Qualifications:

A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

a. The Installer shall directly employ the personnel performing the work of this section.

b. The Installer shall have a supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English. Submit the supervisor’s resume upon request.

c. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

d. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person -

phone number and address and the Architect's name - contact person and phone number.

e. Submit the reference list upon request.

f. The Supervisor shall have a full-size paper set of plans & specifications with him, on the roof, at all times. Work shall not occur unless the Supervisor is present with the plans & specifications.

2. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

3. Pre-Construction: Attend the pre-construction meeting and discuss how and when carpentry work will be performed and coordinated with other work, and how the building will be kept watertight as work occurs.

D. SUBMITTALS

1. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

a. A pre-work site and building inspection report with photos, no videos, to document conditions before work starts on site.

b. Manufacturer's technical literature for all material, to identify the product and manufacturer.

c. Test reports and certifications substantiating compliance with specification requirements only if requested by the Architect.

d. 2 foot long on-site samples which show the size, shape, configuration and method of fastening for all wood blocking assemblies, and which show how the blocking assemblies will relate to and fit on adjoining work.

2. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete and incorrect submittals will not be reviewed. Submittals shall be prepared and made by the firm that will perform the actual work.

1. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program is not established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

2. Do not send technical submittals via email. Do not include Safety Data Sheets with the technical submittals.

3. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

3. Payment requisitions will not be processed until all submittals are received and approved.

E. DELIVERY, STORAGE AND HANDLING

1. Deliver and store materials dry at all times. Cover with tarps and protect against exposure to weather and contact with damp or wet surfaces.

2. Do not overload the structure when storing material on the roof.

3. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

F. GUARANTEE

1. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

    1. Defects include but are not limited to the following: leakage, delamination, lifting, loosening, splitting, cracking, joint separation and movement.

    2. Guarantee coverage shall include the repairs and modifications necessary to enable the work to perform as guaranteed.

    3. Guarantee coverage shall include removing and replacing items installed as part of the original work, if removal is needed to make repairs.

2. Provide one Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

3. The Guarantee shall take effect no more than 30 days before the satisfactory completion of all punch list work.

4. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the entire five year term of the Contractor’s Guarantee.

PART 2 - PRODUCTS

2.1 GENERAL

Provide the following products as specified herein:

A. WOOD, including shims, nailers, blocking, furring and similar members, in the sizes indicated, worked into the shapes shown, and as follows:

1. Lumber: Douglas Fir dimension lumber, free of large knots and other imperfections.

2. Plywood: Exterior grade APA rated Type CDX underlayment plywood.

3. Structural framing: # 2 or better Douglas Fir dimension lumber, free of large knots and other imperfections.

4. Beveled Siding: Utility grade cedar, redwood, or synthetic siding, 1/2 inch by 6 inches and 3/4 inch by 10 inches wide, tapered to 1/8 inch thick.

B. METAL, including light gauge metal channel and stud sections factory formed of minimum 20 gauge cold rolled galvanized steel, unless otherwise shown in the details.

C. FASTENERS

1. Hot dipped galvanized steel, stainless steel, or steel covered with a proprietary rust inhibiting coating.

1. Do not use un-coated steel nails. Remove and replace carpentry components installed with un-coated steel nails.

2. Use screws wherever possible, minimum size diameter #12. If nails are used they shall be annular ring shank type.

1. Do not use dry wall screws to secure wood blocking assemblies. Remove and replace carpentry components installed with drywall screws.

D. CARPENTRY ACCESSORIES

1. Fiberglass batt insulation: un-faced fiberglass insulation, minimum thickness 6 inches, and as needed to fill the expansion joints.

PART 3 - EXECUTION

3.1 INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2. INSTALLATION

A. Install in accordance with manufacturer's recommendations and as follows:

1. Coordinate carpentry work with the installation of the roofing system, insulation, flashings, and other similar items.

2. Shim and set carpentry work plumb and true, except provide slope at the top surfaces of horizontal members as indicated.

3. Stagger joints in built up assemblies at least 2 feet to obtain maximum strength. Provide the shapes needed and adjust wood blocking to suit the existing conditions and achieve full bearing and secure attachment. Discard defective material, and pieces which are too small, and fabricate the work with a minimum of joints and an optimum joint arrangement.

4. Securely attach carpentry work to resist a force of 275 pounds per lineal foot in any direction. Countersink all fasteners flush unless otherwise shown.

5. Space fasteners to achieve adequate holding power, and generally 12 inches apart.
    1. Space nails in wood blocking 8 inches apart.
    2. Install two rows of fasteners on blocking wider than 5 inches.

6. Fit carpentry work neatly scribed and cut to fit within 1/8 inch of adjoining materials. Position furring, nailers, blocking, shims and similar supports for the proper attachment of subsequent work.

7. Fasten wood and metal blocking assemblies to concrete, and masonry walls with 1/4 inch diameter Spike or Drive fasteners. Pre-drill the holes.

B. CLEANING, PROTECTION AND WATERTIGHTNESS

1. Inspect the interior and exterior of the building and grounds, and submit a written report with photos, no videos, to document any pre-existing leakage or damage, prior to performing any other work on site.

2. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that were not documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

3. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

4. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

5. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

6. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION 061000

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood blocking, cants, furring, supports, and nailers.
2. Plywood backing panels.

1.2 DEFINITIONS

A. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. SPIB - Southern Pine Inspection Bureau.
4. WCLIB - West Coast Lumber Inspection Bureau.
5. WWPA - Western Wood Products Association.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.
3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses.

B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.

1.5 QUALITY ASSURANCE

A. All composite wood, engineered wood, or agrifber products (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI).

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings..

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S, unless otherwise indicated.
3. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, and Use Category UC3b for exterior construction not in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. The use of CCA preservative treated wood is prohibited.

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

C. Mark each treated item with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.

C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency

2.4 MISCELLANEOUS LUMBER

A. Provide miscellaneous lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Sleepers
5. Cants

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 19 percent maximum moisture content and the following species: Mixed southern pine; SPIB.

C. For concealed boards, provide lumber with 19 percent maximum moisture content of the following species and grades:

1. Spruce-pine-fir (south) or Spruce-pine-fir, Construction or 2 Common grade; NELMA, NLGA, WCLIB, or WWPA.

2.5 PLYWOOD PANELS

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch (12.7 mm) thick.

1. Paint before mounting of equipment. Do not paint over markings indicating fire retardant treatment.

B. Miscellaneous Concealed Plywood: Exposure 1 sheathing, span rating to suit framing in each location, and thickness as indicated but not less than ½ inch (13 mm).

1. Provide fire-retardant-treated panels for interior locations unless indicated.
2. Provide preservative-treated panels for exterior locations unless indicated.

2.6 MISCELLANEOUS MATERIALS

A. Fasteners:

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
2. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.7 ACCESSORY MATERIALS

A. Weather Resistant Barrier: Asphalt-saturated organic felt, ASTM D 226, Type 1 (No. 15 asphalt felt), unperforated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for

accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.2 PANEL PRODUCT INSTALLATION

A. Fastening Methods: Fasten panels as indicated below:

1. Plywood Backing Panels: Screw to supports.
2. Miscellaneous Concealed Plywood Panels: Screw to supports..

3.3 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION 061053

SECTION 061643 - GYPSUM SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Division 07 Section "Fluid-Applied Membrane Air and Moisture Barriers" for moisture-resistive barrier applied over wall sheathing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain each gypsum sheathing product through one source from a single manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

1.5 SEQUENCING AND SCHEDULING

A. Sequence installing sheathing with installing exterior cladding to comply with requirements indicated below:

1. Do not leave glass-mat gypsum sheathing board exposed to weather for more than 180 days.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory," or GA-600, "Fire Resistance Design Manual."

2.2 GYPSUM SHEATHING, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated

2.3 WALL SHEATHING

A. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. National Gypsum Company; Gold Bond e(2)XP.
   b. United States Gypsum Co.; Securock.
   c. Georgia Pacific; DensGlass

2. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick.
3. Size: 48 by 96 inches (1219 by 2438 mm) or 48 by 120 inches (1219 by 3048 mm) for vertical installation.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

B. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

1. For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C 954.

2.5 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.
2. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.
3. Sealants and tapes shall be compatible with air and moisture barrier specified in Section 072726

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with manufacturer's published instructions.

D. Coordinate wall sheathing installation with air and moisture barrier installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to cold-formed metal framing with screws.
2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.

1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

D. Seal sheathing joints according to sheathing manufacturer's written instructions.

1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

END OF SECTION 061643

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cellular PVC (“AZEK”) boards and trim pieces, and other applications indicated on Drawings.

1.2 SUBMITTALS

A. Product Data: For each type of product and process specified and incorporated into items of exterior finish carpentry during fabrication, finishing, and installation.

B. Samples for Verification: For the following:

1. Cellular PVC (“AZEK”) trim, boards, and moldings, minimum 6 inches long, for each profile and application used in the work.

1.3 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation of exterior finish carpentry only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, reinforcements, and other related units of Work specified in other Sections to ensure that exterior finish carpentry can be supported and installed as indicated.

1.5 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fabrications that fail in materials within specified warranty period.

1. Cellular PVC Material Warranty Period: Lifetime from date of Substantial Completion against manufacturing defects.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cellular PVC Trim, Boards and Fabricated Products: Provide in styles and profiles as indicated on drawings and as required, with smooth surface both sides.

1. Basis of Design Products: Provide AZEK Board and Trim manufactured by AZEK Building Products, or equal.
2. Size: As selected by Architect for each application.

2.2 INSTALLATION MATERIALS

A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, pressure-preservative treated, kiln-dried to less than 15 percent moisture content.

B. Screws and Nails: Stainless steel, type of fastener recommended by manufacturer .

C. Adhesives and Sealants for Cellular PVC Units: Type recommended by manufacturer for applications indicated.

2.3 FABRICATION, GENERAL

A. Fabricate finish carpentry to dimensions, profiles, and details indicated.

B. Cellular PVC Products: Comply with manufacturer's directions for fabrication, routing and assembly of components.

2.4 SHOP FINISHING

A. Opaque Finish: Shop prime and backprime all items of opaque finished architectural woodwork and field finish paint; comply with Section 099100.

B. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install finish carpentry true and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

B. Scribe and cut finish carpentry to fit adjoining work.

C. Anchor finish carpentry to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed nailing, countersunk and filled flush with finish carpentry.

D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of trim available) to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

E. Cellular PVC Products: Comply with manufacturer's directions for installation methods. Glue and mechanically fasten to substrate along unit's entire length to minimize expansion and contraction. Glue joints.

3.2 ADJUSTING AND CLEANING

A. Repair damaged and defective finish carpentry, where possible, to eliminate functional and visual defects; where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

B. Clean finish carpentry on exposed and semiexposed surfaces.

END OF SECTION 062013

SECTION 064020 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Plastic-laminate cabinets and casework, including bookcases and cubbies.
2. Interior wood trim and rails
3. Seating upholstery for reading nooks
4. Plastic laminate shelves.

1.2 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, including cabinet hardware and accessories, and finishing materials and processes.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of furring, blocking, and hanging strips and clips, cabling and connectors, and attachment devices, including concealed blocking and reinforcement specified in other Sections.
3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, wire management, and other items installed in architectural woodwork.

C. Samples for Verification: For the following:

1. Plastic-laminate-clad products, 8 by 10 inches (200 by 250 mm), for each type, color, pattern, and surface finish.
2. Upholstery fabric, 8 by 10 inches (200 by 250 mm), for each type.

D. Product Certificates: Signed by manufacturers of woodwork certifying that products furnished comply with requirements.

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed architectural woodwork similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of interior architectural woodwork.

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.

1. Provide letter on company letterhead certifiying that woodwork complies with AWI requirements for grades specified.

D. Fire-Test-Response Characteristics of Upholstered Chairs:

1. Upholstery Assembly: Assembly shall comply with component-testing requirements of California Technical Bulletin 117-2013.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Low-Emitting Materials: All composite wood, engineered wood, or agrifber products (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI)

C. Wood Species and Cut for Opaque Finish: Clear Poplar

D. Wood Products: Comply with the following:

1. Hardboard: Tempered, S1S, Class 1 minimum 1/4 inch and conforming to PS 58-73.
2. Particleboard: Minimum 45 lb. density particleboard complying with requirements in ANSI A208.1, Grade M - 3i.
3. Medium-Density Fiberboard: ANSI A208.2, Grade 130
4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
5. Hardwood Plywood and Face Veneers: HPVA HP-1.

E. High-Pressure Decorative Laminate (PL1 and PL2): NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

1. Basis of Design Colors, Patterns and Finishes:
   a. PL1: Grey Mesh 4877-38 (Fine Velvet finish)
   b. PL2: Fusion Maple 7909-60 (Matte finish)

2. Basis of Design Product: Wilsonart High Pressure Laminate, or equal products by one of the following:
   a. Formica Corporation.
   b. Laminart.
   c. Panolam Industries International, Inc.

F. Cabinet Interiors (Cabinets with Doors): Plastic laminate with 3 mm PVC edgebanding (kerf and adhesion installation) on shelves

G. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and

complying with requirements of NEMA LD3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semiexposed edges.

H. Adhesive for Bonding Plastic Laminate: Contact cement.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

I. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 80 g/L.

J. Upholstery Fabric (UPH1): 100% polyurethane (polycarbonate based) with silicone finish and knit polyester backing, 54" wide, and 23 oz/lin yd weight.

1. Flammability: Meets NFPA 260 and UFAC Class 1 for cigarette ignition resistance, and California Technical Bulletin 117-2013.
2. Basis of Design Colors, Patterns and Finishes: Color 3043-502 Tortise
3. Basis of Design Products: Beguiled By The Wild from the Charley Harper Biophilia Collection by Designtex

K. Upholstery Foam: Combustion Modified High Resilient (CMHR) foam meeting the following:

1. Density: 3.0 lb/cu ft
2. 25% ILD: 35 lb
3. Support Factor: 2.6
4. Resiliency: 45%
5. Meets California Technical Bulletins 117-2013 and 133 and NFPA 260.
6. Basis of Design Product: Code Red II foam by Hickory Springs Manufacturing, or equal.

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section "Door Hardware."

B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
2. Other specific finishes are scheduled on Drawings

C. Bumpers: Clear pressure sensitive non-skid vinyl bumpers 1/2 inch diameter by 5/32 inches thick; Grass #GF-BP-C, or equivalent.

D. Frameless Concealed Hinges (European Type): 180 degrees of opening, self-closing, three-way adjustable; Grass #GF-1200VX-8, or equivalent.

E. Catches: Magnetic catches, 5 lb. holding power; Ives 324-P69, or equivalent. Provide 1 top mounted at each door.

F. Pulls: Mockett DP3B, 4" long,1-1/2" projection, 3" on center. Finish as selected by Architect.

G. Wire Management Grommets: As specified on the Drawings. .

H. Drawer Slides: 3/4 extension type, constructed from zinc plated cold-rolled steel, with ball-bearing rollers, 75 lbf (330 N) load rated; Accuride 214 Series, or equivalent.

I. Slides for File Drawers: Full extension type, constructed from zinc plated cold-rolled steel, with ball-bearing rollers, 200 lbf (890 N) load rated; Accuride 4437 Series, or equivalent.

J. Pencil Drawer Slides: 45 lbf (200 N), Accuride 214 Series, or equivalent

K. Adjustable Shelf Supports: Peg type, steel, 5/16" stem length, 1/4" bore, spoon width 25/64"; Progressive IF-739NP, or equivalent.

L. Locks: Door locks - NL-C8173-26D; drawer locks - NL-C8178-26D; strike - NL-C2004-14A; National Cabinet Lock, or equivalent. Keyed as requested by Owner.

M. Levelers: Plastic leveling system, including socket, leveler, toe kick clip, and toe kick handle; Camar model CM-835-E1-00, CM-345-10-P2, CM-202-V1-T2, and CM-230-01-DE, or equivalent.

2.3 ACCESSORIES

A. Shelving: 3/4" thick with 3 mm PVC kerfed edges, unless otherwise indicated.

1. Provide plastic laminate faced panel product as indicated on drawings.

B. Adjustable Shelf Supports: Decorative, heavy-duty double-slotted standards adjustable on 1-1/4" centers with decorative brackets in length indicated on drawings. Include all accessories including cover strips, end caps, joiners, spacers and fasteners, as required for complete installation. Provide with epoxy finish in color as selected by Architect.from manufacturer’s standards.

1. Product: Knap & Vogt #82 standards and #182 brackets, or equivalent.

2.4 INSTALLATION MATERIALS

A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.5 FABRICATION, GENERAL

A. Interior Woodwork Grade: Provide grade as specified for each item of interior woodwork complying with the referencedquality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm)

D. Complete fabrication, including assembly, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

E. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.6 INTERIOR WOOD TRIM AND RAILS

A. Quality Standard: Comply with ANSI/AWI 0622.0646-2024 (formerly AWI Section 6).

B. Grade: Custom, for opaque finish items.

C. Wood Species and Cut for Exposed Surfaces: As specified above.

D. For trim items wider than available lumber, use veneered construction. Do not glue for width.

E. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work

F. Assemble casings in plant except where limitations of access to place of installation require field assembly.

G. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

2.7 PLASTIC-LAMINATE CABINETS AND CASEWORK

A. Quality Standard: Comply with ANSI/AWI 0641-2019 (formerly AWI Section 10) requirements for custom laminate cabinets.

B. Grade: Premium

C. AWI Type of Cabinet Construction: Full overlay.

D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:

1. Horizontal Surfaces Other Than Tops: HGS.
2. Postformed Surfaces: HGP.
3. Vertical Surfaces: HGS.
4. Edges: HGS

E. Materials for Semiexposed Surfaces Other Than Drawer Bodies:

1. Drawer Sides and Backs: Thermoset decorative overlay.
2. Drawer Bottoms: Thermoset decorative overlay.

F. Colors, Patterns, and Finishes: As scheduled, or if not scheduled, as selected by Architect.

G. Substrate: Plywood.

H. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

2.8 CUSHIONS FOR SEATING PLATFORM

A. Fabricate upholstered seating in sizes indicated on Drawings for each location.

2.9 SHOP FINISHING

A. Quality Standard: Comply with AWI Section 5, unless otherwise indicated.

1. Grade: Provide finishes of same grades as items to be finished.

B. General:

1. Shop prime and backprime all items of opaque finished architectural woodwork at fabrication shop before shipment to site; comply with requirements of Section 099100 for preparation and priming of wood.

C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative overlay.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWI Sections cited for fabrication and in the same grade, as specified in Part 2 of this Section for type of woodwork involved

B. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

C. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.

D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

E. Wood Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where shorter single-length pieces are necessary.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
2. Install trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish

G. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in shop.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064020

SECTION 064023 - EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood brackets at cornice (frieze) to match existing historic wood brackets.

1.2 SUBMITTALS

A. Product Data: For each type of product and process specified and incorporated into items of exterior architectural woodwork during fabrication, finishing, and installation.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of blocking and nailers, including concealed blocking and reinforcement specified in other Sections.

C. Samples of Existing Components: Submit example of each type of existing wood component required to be duplicated to millwork shop so components can be exactly reproduced. Examples shall be limited to components that are to be removed and replaced as part of the work. Take care not to damage existing components to remain.

D. Samples of New Components, for Verification: Submit samples of all specified wood materials including actual shop milled components for each different type and profile to be produced, along with corresponding samples of existing components furnished to millwork shop by Contractor for direct comparison as applicable. Finish samples on one side and one edge. Resubmit rejected materials until approved. Approved samples may be incorporated in the Work, as directed by the Architect.

1. Wood Components:. Submit the following:
   a. One each type of bracket to be provided in the work, full size.

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Journeyman carpenters who are thoroughly trained and experienced in reproducing historic architectural woodwork and the skills required, completely familiar with the materials involved and the required methods of installation,

and thoroughly familiar with the requirements of this Work. In acceptance or rejection of work, no allowance will be made for lack of skill on part of installers.

B. Fabricator Qualifications: A recognized shop specializing in manufacture of traditional architectural woodwork with trained and skilled personnel experienced with methods and standards specified. In acceptance or rejection of work, no allowance will be made for lack of skill on part of fabricators.

C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for fabrication and installation of exterior architectural woodwork.

D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of exterior architectural woodwork, construction, finishes, and other requirements.

1.4 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation of exterior architectural woodwork only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.5 COORDINATION

A. Coordinate sizes and locations of framing, blocking, reinforcements, and other related units of Work specified in other Sections to ensure that exterior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Species and Cut: White Oak.

2.2 INSTALLATION MATERIALS

A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, pressure-preservative treated, kiln-dried to less than 15 percent moisture content; refer to Section 061053.

B. Screws and Nails: Stainless steel or hot dipped galvanized, type of fastener recommended by manufacturer.

2.3 FABRICATION, GENERAL

A. Fabricate architectural woodwork to dimensions, profiles, and details indicated.

B. Historic Profiles of Millwork: Match original profiles for brackets. Fabricate new architectural woodwork components to match existing for each separate item, and as indicated on Drawings.

1. Where historical profiles are to be reproduced, strip paint from original piece and carefully match original section. Mill material to shapes and dimensions shown and exactly matching existing millwork at each location. Milling and shaping shall be clean and true with sharply cut moldings, arrises, corners, etc. Allow for slight reduction in size in shop sanding to ensure matching of dimensions.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

1. Edges of Solid-Wood (Lumber) Members 3/4 Inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
2. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).

D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

E. Shop-cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and seal with a water-resistant coating suitable for exterior applications.

2.4 ORNAMENTAL WORK

A. Quality Standard: Comply with ANSI/AWI 0622.0646-2024 (formerly AWI Section 6).

B. Grade: Premium.

C. Wood Species: As specified above.

2.5 SHOP FINISHING

A. Opaque Finish: Shop prime and backprime all items of opaque finished architectural woodwork and field finish paint; comply with Section 099100.

B. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWI for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install architectural woodwork true and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

C. Scribe and cut architectural woodwork to fit adjoining work.

D. Anchor architectural woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed nailing, countersunk and filled flush with architectural woodwork.

3.2 ADJUSTING AND CLEANING

A. Repair damaged and defective architectural woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace architectural woodwork. Adjust joinery for uniform appearance.

B. Clean architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 064023

SECTION 066116 - SOLID SURFACE MATERIAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes solid surface material fabricated into the following:

1. Solid surface material countertops
2. Solid surface material window sills.

B. Related Sections include the following:

1. Blocking and grounds, including supports for solid surface material countertops, is specified in Division 06 Section "Miscellaneous Carpentry".
2. Sealants are specified in Division 07 Section "Sealants."

1.2 ACTION SUBMITTALS

A. Shop Drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions, cutouts for insertion of accessories, and coordination requirements with adjacent work.

B. Samples: Submit minimum 6" x 6" samples of selected colors and patterns. Where color is not specified, provide full range of manufacturer's available color samples for selection by Architect.

C. Product Data: Indicate product description, fabrication information, and compliance with specified performance requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance Data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.

B. Fabricator's Certificate: Submit certificate from manufacturer stating that fabricator is certified by manufacturer for this work.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced and licensed by manufacturer for production of solid surface fabrications similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.

B. Fire-Test-Response Characteristics: Provide materials with surface-burning characteristics as indicated below, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less

1.5 JOB CONDITIONS

A. Do not deliver components to project site until areas are ready for installation. Store indoors.

B. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

C. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of work. Allow for adjustments where taking of field measurements before fabrication might delay work.

D. Coordination: Furnish inserts and anchorages which must be built into other work. Coordinate delivery with other work to avoid delay.

1.6 WARRANTY

A. General: The special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Manufacturer's Warranty. The manufacturer warrants to the original purchaser for commercial use that the manufacturer will at its option repair or replace, without charge, such product if it fails due to a manufacturing defect during the first 10 years after initial installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturers: Provide Basis of Design Products or equal product of one of the following:

1. AristechAcrylics, LLC.
2. DuPont Polymers
3. Formica
4. Wilsonart Engineered Surfaces, LLC

2.2 MATERIALS

A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.

B. Solid Surface Material (SO1): Homogeneous solid sheets of filled plastic resin complying with ICPA SS-1.

1. Thickness: 12 mm (1/2").
2. Color(s) and Pattern(s): Harmony DM5011.
3. Finish: Semigloss.
4. Basis of Design Products: Durasein Solid Surface, or equal by one of the following:
   a. Wilsonart Solid Surface by Wilsonart Engineered Surfaces, LLC
   b. Corian by DuPont.
   c. Durat
   d. Krion Porcelanosa Solid Surface

2.3 MISCELLANEOUS MATERIALS

A. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints with chemical bonding.

B. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

2.4 FABRICATION

A. General: All fabrications shall be made using solid surface material. Fabrications shall be adhesively jointed with no exposed seams and having edge details as indicated on drawings. No exposed fasteners shall be allowed.

B. Factory fabricate components into single unit to sizes and shapes indicated, in accordance with approved shop drawings.

C. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.

D. Provide factory cutouts for bowls, plumbing fittings and accessories as indicated on the drawings.

E. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.

F. Countertops: Fabricate tops in one piece. Comply with solid surfacing material manufacturer's recommendations for adhesives, sealers, fabrication, and finishing. Provide countertops with backsplash, endsplashes, aprons and nosings as shown.

1. Total countertop thickness shall be as indicated on the Drawings or if not indicated, 1-1/2" thick. Provide built-up fabrication as required to obtain required total thickness.
2. Countertop Edges: Built-up, 1-1/2" thick, with eased edge

G. Allowable Tolerances

1. Variation in component size: ±1/8".
2. Location of openings: ±1/8" from indicated location.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine surface to receive work and conditions under which work will be installed. Do not proceed with work until all unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings and product installation data.

B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Keep components and hands clean when making joints.

3.3 ADJUST AND CLEAN

A. Clean exposed surfaces using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period. Repair work or replace damaged work that cannot be repaired as required.

B. Keep components and hands clean during installation. Remove adhesives, sealants, and other stains. Replace stained components.

END OF SECTION 066116

SECTION 071326 – SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Types of sheet waterproofing specified in this Section include the following:

1. Adhesive-coated HDPE sheet waterproofing for below grade applications at elevator pit floors.
2. Rubberized asphalt sheet waterproofing for below grade applications at elevator pit walls, basement walls and all below-grade walls at occupied spaces.
3. Drainage protection board for vertical applications.

B. Related Sections Include the Following:

1. Division 07 Section "Thermal Insulation" for below-grade rigid insulation installed with waterproofing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site in compliance with the following:

1. Before installing waterproofing, meet with Owner, Architect, consultants, independent testing agency, waterproofing manufacturer, and other concerned entities.
2. Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, inspection and testing procedures, and protection and repairs.
3. Notify participants at least 7 days before conference.

1.3 ACTION SUBMITTALS

A. Product Data for each type of waterproofing specified, including manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties.

1. Certification by waterproofing materials manufacturer that products supplied comply with local VOC regulations.

B. Shop Drawings showing locations and extent of waterproofing, including details for substrate joints and cracks, sheet flashings, penetrations, tie-ins with adjoining construction, and other termination conditions.

C. Samples, 3-by-6-inch minimum size, of each waterproofing and associated materials required for Project.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer. Submit certificates signed by manufacturer stating that installers comply with requirements under the "Quality Assurance" Article

B. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Obtain primary waterproofing materials of each type required from a single manufacturer that has been producing such materials for a minimum of ten years. Provide secondary materials only as recommended by manufacturer of primary materials.

B. Installer: A firm with not less than five waterproofing projects similar to requirements (including size and scope) for this Project with satisfactory in-service performance and which is acceptable to primary waterproofing materials manufacturer.

C. Single-Source Responsibility: Obtain waterproofing materials from a single manufacturer regularly engaged in manufacturing waterproofing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, date of manufacture, and directions for storage.

B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

A. Substrate: Proceed with work after substrate construction, openings, and penetrating work have been completed and areas are free of standing or running water, ice, and frost. Verify that concrete is dry, smooth, and free from sharp or ragged out-angles, honeycombing, rock pockets, depressions, and projections.

B. Environmental Conditions: Apply waterproofing within range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.

1. Do not apply waterproofing in snow, rain, fog, or mist.
2. Proceed with waterproofing and associated work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

C. Do not install waterproofing where it will be exposed to rain, sleet or snow for any duration prior to the installation of toppings or other adjacent materials.

1.8 WARRANTY

A. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the manufacturer, agreeing to repair or replace sheet membrane waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Provide waterproofing system with all auxiliary components as required and recommended by manufacturer for applications indicated; manufactured by one of the following, or equal:

1. Henry, a Carlisle company
2. GCP Applied Technologies, Inc.
3. Tamko Roofing Products, Inc.
4. Tremco
5. Polyguard Products, Inc.

2.2 RUBBERIZED ASPHALT SHEET WATERPROOFING

A. Self-adhesive, cold-applied composite sheet consisting of a thickness of 1.4 mm (0.056 in.) of rubberized asphalt and 0.1 mm (0.004 in.) of cross-laminated, high density polyethylene film, formed into uniform flexible sheets of not less than 1.5 mm (0.060 inch) thick, complying with the following:

1. Tensile Strength: 325 psi minimum; ASTM D 412.
2. Ultimate Elongation: 300 percent minimum; ASTM D 412.
3. Puncture Resistance: 50 lbs minimum; ASTM E 154.
4. Hydrostatic Head Resistance: 230 feet minimum; ASTM D 5385.
5. Water Absorption: Not more than 0.1 percent weight gain after 48 hours' immersion at 70 deg F (21 deg C); ASTM D 570.
6. Permeance: 0.1 perm maximum; ASTM E 96, Section 12 – Water Method.
7. Application Temperature: Above 40 deg. F

B. Basis of Design Product: Provide Bituthene System 3000 by GCP Applied Technologies, Inc. or one of the following:

1. MiraDRI 860/861; Henry, a Carlisle company.
2. TW-60; Tamko Roofing Products, Inc.
3. TREMproof 560A; Tremco

2.3 ADHESIVE-COATED HDPE SHEET WATERPROOFING

A. Adhesive-Coated HDPE Sheet for Horizontal Applications: 46-mil- (1.2-mm-) thick, uniform, flexible sheets consisting of 30-mil- (0.76-mm-) thick, HDPE sheet coated with a pressure-sensitive rubber adhesive, a protective adhesive coating, a detackifying surface treatment, an uncoated self-adhering side lap strip, and a release liner with the following physical properties:

1. Tensile Strength, Film: 4000 psi (27.6 MPa) minimum; ASTM D 412.
2. Low-Temperature Flexibility: Pass at minus 10 deg F (minus 23 deg C); ASTM D 1970.
3. Peel Adhesion to Concrete: 5 lbf/in. (875 N/m); ASTM D 903, modified.
4. Lap Adhesion: 2.5 lbf/in. (440 N/m); ASTM D 1876, modified.
5. Hydrostatic-Head Resistance: 231 feet (70 m); ASTM D 5385, modified.
6. Vapor Permeance: 0.01 perms (0.6 ng/Pa x s x sq. m); ASTM E 96, Water Method.
7. Water Absorption: 0.5 percent; ASTM D 570.

B. Basis of Design Product: Provide Preprufe 300R manufactured by GCP Applied Technologies, Inc. or one of the following:

1. Underseal Underslab Membrane; Polyguard Products, Inc.
2. TREMproof PrePly; Tremco.

2.4 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

B. Adhesives and Joint Tape: Provide types of adhesive compound and tapes recommended by waterproofing sheet manufacturer for bonding to substrate (if required), for waterproofing seams in membrane, and for waterproofing joints between membrane and flashings, adjoining surfaces, and projections through membrane.

1. Detail Tape for HDPE Membrane: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches (114 mm) wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.

C. Primers: Provide type of concrete primer recommended by manufacturer of sheet waterproofing material for applications required.

D. Flashing Materials: Except as otherwise indicated, provide types of flexible sheet material for flashing as recommended by waterproofing sheet manufacturer.

E. Trowelable Liquid Membrane: Two component, cold-applied trowel grade waterproofing material used to flash corners, form fillets and detail hard-to-reach areas. Type recommended by membrane manufacturer, compatible with membrane.

F. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (229-mm) centers.

G. Rigid Insulation: Specified in Division 07 Section “Thermal Insulation”.

H. Waterstops: Hydrophilic waterstop for non-moving concrete construction joints.

1. Basis of Design Product: Adcor by GCP Applied Technologies or equal.

2.5 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite drainage panels, 3-dimensional, nonbiodegradable, manufactured with a permeable geotextile bonded to molded-plastic-sheet drainage core and designed to effectively convey water.

1. Vertical Application: Provide product with properties suitable for use vertically:
   a. Thickness: 0.40 inches (10.16 mm) min.
   b. Compressive Strength per ASTM D 1621: 15,000 pounds per sq. ft..
   c. Filter Fabric Tensile Strength per ASTM D 4632: 100 pounds min.
   d. Filter Fabric Puncture Resistance per ASTM D 4833: 65 pounds.
   e. Filter Fabric Apparent Opening Size per ASTM D 4751: Sieve size 70 max.
   f. Basis of Design Product: Provide Hydroduct 220 by GCP Applied Technologies, Inc. or one of the following:
      1) MiraDRAIN 6000/6200; Henry a Carlisle company.
      2) Hydrotech Hydrodrain 400; Sika Corp.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which waterproofing systems will be applied, with Installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

1. Do not proceed with installation until after minimum concrete curing period recommended by waterproofing manufacturer.
2. Verify substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
3. Verify that compacted subgrade is dry, smooth, and sound; and ready to receive adhesive-coated HDPE sheet.
4. Notify Architect in writing of anticipated problems using waterproofing over substrate.

3.2 SURFACE PREPARATION

A. General: Comply with manufacturer's instructions for preparing surface.

B. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for waterproofing application.

C. Mask off adjoining surfaces not receiving waterproofing to prevent spillage affecting other construction.

D. Remove grease, oil, bitumen, form release agents, paints, and other penetrating contaminants from concrete.

E. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.

F. Prepare, fill, prime, and treat joints and cracks in substrate in accordance with manufacturer’s directions. Remove dust and dirt from joints and cracks according to ASTM D 4258.

G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135 and manufacturer’s directions.

H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

I. Apply primer to substrate surfaces at rate recommended by manufacturer of primary waterproofing materials. Prime only area that will be covered by waterproofing membrane in same working day. Reprime areas not covered by waterproofing membrane within 24 hours.

3.3 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions for handling and installing sheet waterproofing materials.

1. Apply rubberized asphalt membrane waterproofing to vertical surfaces of elevator pit, foundation walls, and elsewhere as indicated on drawings.
2. Apply adhesive coated HDPE membrane waterproofing under slab at elevator pit, and elsewhere as indicated on drawings.

B. Coordinate installing waterproofing materials with associated work to provide complete system complying with combined recommendations by manufacturers and installers involved in Work. Schedule installation to minimize exposure of sheet waterproofing materials.

3.4 RUBBERIZED ASPHALT SHEET WATERPROOFING APPLICATION

A. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required. Stagger end laps.

B. Apply bonding adhesive to substrate at required rate and allow to partially dry.

C. Apply waterproofing sheet to vertical surfaces in shingled fashion, starting at the low point and working toward high point of wall. Overlap all side seams a minimum of 2-1/2 inches and end laps a minimum of 5 inches. Roll all membrane with hand roller. Firmly press edges of membrane to surfaces to provide watertight seal. Apply bead of mastic to all terminations.

1. Provide a fillet of liquid membrane at all inside corners covered with sheet waterproofing prior to flashing with sheet waterproofing.

D. Seal projections through membrane and seal seams. Bond to vertical surfaces and also, where shown or recommended by manufacturer, bond to horizontal surfaces.

E. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal waterproofing sheet in place with clamping ring.

F. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints

G. For vertical and sloped-wall membrane, finish in termination bar; otherwise finish under flashing or under masonry in joint. Seal exposed edges with mastic or sealant.

H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheets extending 6 inches (150 mm) beyond repaired areas in all directions.

I. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

J. Immediately install drainage panels with butted joints over waterproofing membrane

3.5 ADHESIVE-COATED HDPE SHEET WATERPROOFING APPLICATION

A. Install adhesive-coated HDPE sheets according to manufacturer's written instructions.

B. Horizontal Applications: Install adhesive-coated HDPE sheet with HDPE face against substrate. Accurately align sheets and maintain uniform 3-inch- (75-mm-) minimum lap widths and end laps. Overlap and seal seams. Overlap, stagger, and seal end laps with detail tape to ensure watertight installation.

C. Corners: Seal lapped terminations and cut edges of sheet waterproofing at inside and outside corners with detail tape.

D. Seal penetrations through sheet waterproofing to provide watertight seal with detail tape patches or wraps and a liquid-membrane troweling.

E. Install sheet waterproofing and auxiliary materials to produce a continuous watertight tie into adjacent waterproofing.

F. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Tape perimeter of damaged or nonconforming area extending 6 inches (150 mm) beyond repaired areas in all directions. Apply a patch of sheet waterproofing and firmly secure with detail tape.

G. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

3.6 MOLDED-SHEET DRAINAGE PANEL INSTALLATION

A. Place and secure molded-sheet drainage panels with geotextile facing away from wall surface, according to manufacturer's written instructions over installed waterproofing membrane. Use adhesives that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels by installing protection course of rigid insulation over drainage panel, as indicated on Drawings.

3.7 INSULATION INSTALLATION

A. Install single layer of board insulation over installed drainage panel as indicated on Drawings. Cut and fit to within 3/4 inch (19 mm) of projections and penetrations

B. On vertical surfaces, set insulation units in adhesive or tape applied according to manufacturer's written instructions.

C. Protect during subsequent construction operations.

3.8 PROTECTING AND CLEANING

A. Protect waterproofing from damage and wear during application and remainder of construction period according to manufacturer's written instructions. Do not allow traffic of any type on unprotected membrane.

B. Protect installed insulation from damage due to ultraviolet light exposure, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 071326

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Foam-plastic board insulation.
2. Mineral-wool blanket insulation.
3. Mineral-wool board insulation
4. Spray foam insulation, closed cell type

B. Related Sections:

1. Section 042000 "Unit Masonry" for insulation installed in cavity walls.
2. Section 075419 "EPDM Roofing" for insulation specified as part of roofing construction.
3. Section 078446 "Joint Firestopping" for insulation installed as part of a perimeter joint firestopping system.
4. Section 092900 "Gypsum Board" for installation of acoustical blankets in metal-framed assemblies.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

B. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES.

C. Qualification Data: For spray foam Installer

1.4 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Spray Foam Applicator: An authorized representative who is trained and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Store spray foam materials in an area protected from freezing and overheating damage and in accordance with manufacturer's instructions

C. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. Basis of Design Product: Styrofoam Brand Square Edge XPS Insulation by DuPont or equal products by one of the following:
   a. DiversiFoam Products.
   b. Owens Corning.

2. Type IV, 25 psi.
3. R-Value per Inch: 5.
4. Thickness: As indicated on Drawings for each application.
5. Edges: Square edge.
6. Applications: Below grade applications.

B. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84. .

1. Products: Subject to compliance with requirements, provide one of the following:
   a. DiversiFoam Products; CertaFoam 15.
   b. DuPont; Dow Styrofoam Brand Cavitymate Plus.
   c. Owens Corning; Foamular CW15 Square Edge.

2. Type X, 15 psi.
3. R-Value per Inch: 5.
4. Thickness: As indicated on Drawings.

5. Edges: Square edge.
6. Applications: In cavity behind stone veneer.

C. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).

2.2 MINERAL-WOOL BOARD INSULATION (SEMI-RIGID)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:

1. Industrial Insulation Group LLC; Div. of Johns Manville
2. Isolatek International.
3. Owens Corning.
4. Roxul Inc.
5. Thermafiber.

B. Foil-Faced, Mineral-Wool Board Insulation: ASTM C 612; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder; with maximum flame-spread and smoke-developed indexes of 25 and 5, respectively, per ASTM E 84.

1. Nominal density of 4 lb/cu. ft., Types IA and IB, thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F.
2. Fiber Color: Regular color, unless otherwise indicated.
3. Thickness: As indicated on Drawings for each application
4. Application: At exterior wall locations and in ventilation space for fin tube radiators.

2.3 MINERAL-WOOL BLANKET INSULATION

A. Unfaced, Mineral-Wool Blanket Insulation: ASTM C 665, Type 1 (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

1. Basis of Design product: Provide Comfortbatt by Rockwool or equal product by one of the following:
   a. Owens Corning
   b. Johns Manville

2. R-Value per Inch of Thickness: 4.0 minimum.
3. Thickness: As indicated on Drawings for each application
4. Application: Provide for concealed building insulation in ceiling/roof assemblies, parapets, exterior stud walls, and elsewhere indicated on drawings.

2.4 SPRAY FOAM INSULATION

A. Closed-Cell Spray Polyurethane Foam: ASTM C1029, Type II, minimum density of 2.0 lb/cu. ft. and minimum aged R-value of 7.4 deg F x h x sq. ft./Btu at 75 deg F at 1 inch thickness, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.

1. Compressive Strength: Minimum 31 psi
2. Basis of Design Product: Provide HeatLok HFO Pro by Huntsman Building Solutions or comparable product by one of the following:
   a. Carlisle
   b. DuPont (formerly Dow).
   c. Henry Company.

3. Application: Provide for underside of roof deck where indicated.

2.5 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

1. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
   b. Eckel Industries of Canada; Stic-Klip Type N Fasteners
   c. Gemco; Spindle Type.

2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

1. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. Gemco; 90-Degree Insulation Hangers.

2. Angle: Formed from 0.030-inch- (0.762-mm-) thick, perforated, galvanized carbon-steel sheet with each leg 2 inches (50 mm) square.
3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches (38 mm) square or in diameter.

1. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. AGM Industries, Inc.; RC150 or SC150.
   b. Gemco; Dome-Cap, R-150 or S-150.

2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
   a. Crawl spaces.
   b. Ceiling plenums.
   c. Attic spaces.
   d. Where indicated.

D. Gas-Actuated Insulation Fasteners: Non-metallic insulation fastener assembly consisting of a plate or washer component formed from HDPE and a nail or pin component fabricated from zinc coated carbon steel pre-mounted in the plastic assembly, designed to be installed using a proprietary gas-actuated tool.

1. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. X-IE-G Insulation Fastening System by Hilti
   b. Ramset-I-F System by ITW Commercial Construction

2.6 MISCELLANEOUS MATERIALS

1. Primer: Material recommended by spray foam insulation manufacturer where required for adhesion of insulation to substrates

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

B. Priming: Prime substrates where recommended by spray foam insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions. Extend insulation to dimension below exterior grade line as indicated.

1. Where below grade insulation is installed over drainage protection board and installed waterproofing membrane, install boards vertically, loose laid.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

3.4 INSTALLATION OF INSULATION FOR FRAMED AND FURRED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Foam-Plastic Board Insulation: Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs. Install with required number of fasteners in accordance with manufacturer’s recommendations.
5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
   a. Exterior Walls: Set units with facing placed toward interior of construction.

D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Unfaced mineral wool insulation.

3.5 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION

A. Where mineral-wool blankets are indicated for sound attenuation above ceilings, install blanket insulation over entire ceiling area in thicknesses indicated. Extend insulation 48 inches (1219 mm) up either side of partitions.

3.6 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:

1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

B. Install board insulation on concrete substrates by gas-actuated fastening system in accordance with manufacturer’s directions.

3.7 INSTALLATION OF SPRAY FOAM INSULATION

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Spray insulation to envelop entire area to be insulated and fill voids.

C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

D. Do not apply insulation within 3 inches (76 mm) of heat-emitting devices or where temperature exceeds 200 deg F (93 deg C) per ASTM C411, or in accordance with applicable codes.

E. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.

F. Cavity Walls: Install into cavities to fully fill void.

G. Miscellaneous Voids: Apply in accordance with manufacturer's written instructions

3.8 PROTECTION

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072419 - WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)

PART 1 - GENERAL

1.1 This Section includes the following:

1. Water-drainage exterior insulation and finish system (EIFS) applied over gypsum sheathing.

B. Related Work Specified Elsewhere:

1. Gypsum sheathing is specified in Division 06 Section “Gypsum Sheathing.”

1.2 DEFINITIONS

A. Class PB EIFS: A non-load-bearing, exterior wall cladding system that consists of an insulation board attached adhesively, mechanically, or both to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

B. Water-Drainage EIFS: EIFS with a means that allows water entering into an EIFS assembly to drain to the exterior.

1.3 ACTION SUBMITTALS

A. Product Data: For each component of EIFS specified.

B. Shop Drawings: Show fabrication and installation of system including plans, elevations, sections, details of components, reveals, joint locations and configurations within system and between system and construction penetrating it, termination details, and attachments to construction behind system.

C. Samples for Initial Selection: Manufacturer's color charts and small-scale samples consisting of units or sections of units showing the full range of colors, textures, and patterns available for each finish choice indicated.

1. Submit sealant manufacturer's standard bead samples consisting of strips of actual products showing the full range of colors available.

D. Samples for Verification: 24-inch- (600-mm-) square panels for each finish, color, texture, and pattern specified. Prepare samples using same tools and techniques intended for actual work.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates: Signed by EIFS manufacturer, certifying the following:

1. EIFS complies with requirements.
2. Substrates to which EIFS is indicated to be attached are acceptable to EIFS manufacturer.
3. Accessory products installed with EIFS, including joint sealants, flashing, water-resistive barrier coatings, trim, whether or not furnished by EIFS manufacturer and whether or not specified in this Section, are acceptable to EIFS manufacturer..

B. Qualification Data: For installer.

C. Product Test Reports: Indicate compliance of proposed EIFS with physical property requirements specified in "Performance Requirements" Article based on comprehensive testing of current products by a qualified testing and inspecting agency.

D. Research/Evaluation Reports: Evidence of EIFS compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An installer who is certified in writing by the EIFS manufacturer as qualified to install their system using trained workers

B. Source Limitations: Obtain materials for system from one source and by a single manufacturer or by manufacturers approved by EIFS manufacturer as compatible with other system components.

C. Mock-ups: Mockups: Prepare mockups of new EIFS installation to demonstrate aesthetic effects and qualities of materials and execution. Prepare mockups on existing walls under same weather conditions to be expected during remainder of the Work. Final selection of EIFS finish coat appearance will be made by Architect based on acceptance of mock-ups.

1. Locate mock-ups where directed by Architect.
2. Notify Architect seven days in advance of dates and times when mock-up will be performed.
3. Provide a mock-up of approximately 25 sq. ft. in area for each type of EIFS finish to be provided.
4. Reprepare mock-ups as required to obtain Architect's approval.
5. Do not commence general EIFS installation work until Architect’s acceptance of mock-ups’ visual qualities has been obtained.
6. Cover and protect approved mock-ups until completion of all general EIFS work.
7. Approved mock-ups will be used as standard against which all EIFS work will be judged.
8. Approved mock-ups may become part of the final work upon acceptance by Architect

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original, unopened packages with manufacturer's labels intact and clearly identifying products.

B. Store materials inside and under cover; keep them dry and protected from the weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.

1. Stack insulation board flat and off the ground.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install system when ambient outdoor air and substrate temperatures are 40 deg F (4.4 deg C) and falling unless temporary protection and heat are provided to maintain ambient temperatures above 40 deg F (4.4 deg C) during installation of wet materials and until they have dried thoroughly and become weather resistant, but for at least 24 hours after installation.

1.8 COORDINATION AND SCHEDULING

A. Coordinate installation of EIFS with related Work specified in other Sections to ensure that wall assemblies, including sheathing, flashing, trim, joint sealers, windows, and doors, are protected against damage from the effects of weather, age, corrosion, moisture, and other causes. Do not allow water to penetrate behind EIFS.

1.9 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace components of EIFS-clad drainage-wall assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Bond integrity and weathertightness.
   b. Deterioration of EIFS finishes and other EIFS materials beyond normal weathering.

2. Warranty coverage includes the following components of EIFS-clad drainage-wall assemblies:
   a. EIFS finish, including base coats, finish coats, and reinforcing mesh.
   b. Insulation installed as part of EIFS.
   c. Insulation adhesive and mechanical fasteners.
   d. EIFS accessories, including trim components and flashing.
   e. Water-resistive barrier coatings.
   f. EIFS drainage components.

3. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturers: Subject to compliance with requirements, provide "Outsulation X + MD" system by Dryvit Systems, Inc., or equal products by one of the following:

1. Synergy, a BASF Company.
2. STO.

2.2 PERFORMANCE REQUIREMENTS

A. EIFS Performance: Comply with ASTM E2568 and with the following:

1. Weathertightness: Resistant to uncontrolled water penetration from exterior, with a means to drain water entering EIFS to the exterior
2. Structural Performance of Assembly and Components:
   a. Wind Loads: Uniform pressure as indicated on Structural Drawings.
3. Impact Performance: ASTM E2568; Standard impact resistance except provide Ultra High impact resistance at all lower panels within 8 ft. of ground.
4. Abrasion Resistance: Sample consisting of 1-inch- (25.4-mm-) thick EIFS mounted on 1/2-inch- (12.7-mm-) thick gypsum board; cured for a minimum of 28 days; and showing no cracking, checking, or loss of film integrity after exposure to 528 quarts (500 L) of sand when tested per ASTM D 968, Method A.
5. Mildew Resistance: Sample consisting of finish coat applied to 2-by-2-inch (50.8-by-50.8-mm) clean glass substrate; cured for 28 days; and showing no growth when tested per ASTM D 3273 and evaluated according to ASTM D3274.
6. Drainage Efficiency: 90 percent average minimum when tested according to ASTM E2273.

B. Fire-Test-Response Characteristics: Provide system assemblies and components with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting agency.

1. Flame Spread of Insulation Board and Finish Coats: 25 or less when tested individually per ASTM E 84.
2. Smoke Developed of Insulation Board and Finish Coats: 450 or less when tested individually per ASTM E 84.

2.3 MATERIALS

A. Compatibility: Provide substrates, adhesive, board insulation, reinforcing meshes, base- and finish-coat materials, air and moisture barrier, sealants, and accessories that are compatible with one another and approved for use by system manufacturer for Project.

B. Colors, Textures, and Patterns of Finish Coat: Comply with the following requirements:

1. Provide Architect's selections from system manufacturer's full range of colors, textures, and patterns for type of finish coat indicated.

C. Weather Barrier: Permeable fluid-applied air and water resistive barrier, polymer-based and non-cementitious; “Backstop NTX,” or equivalent.

D. Weather Barrier Accessories:

1. Fiberglass Mesh Tape: Open weave fiberglass mesh tape with pressure sensitive adhesive; “Grid Tape,” or equivalent.
2. Liquid-Applied Flashing: Flexible water-based polymer material; “Aquaflash Liquid” and “Aquaflash Mesh” or equivalent.
3. Flashing and Filler: Flexible waterproof, low temperature gun applied material: “Backstop Flash and Fill” or equivalent.

E. Waterproof Adhesive for Application of Insulation: System manufacturer's waterproof formulation designed for indicated use, compatible with substrate, and complying with the following requirements:

1. Job-mixed formulation of portland cement complying with ASTM C 150, Type I, and polymer-based adhesive; “Genesis,” or equivalent.

F. Extruded-Polystyrene Board Insulation: Rigid, closed cell high-performance polystyrene material formed by the extrusion process, and meeting ASTM C578 Type X properties.

1. R-Value = 5.0/inch
2. Provide insulation in boards not more than 24 by 48 inches (610 by 1219 mm) and in thickness indicated but not more than 4 inches (102 mm).
3. Provide pre-coated insulation starter boards, corners and shapes as required for complete installation.
4. Basis of Design Product: Provide DOW XNERGY XPS by Dryvit.

G. Reinforcing Mesh: Balanced, alkali-resistant, open-weave glass-fiber mesh treated for compatibility with other system materials, made from continuous multiend strands with retained mesh tensile strength of not less than 120 lbf/in. (21 dN/cm) per EIMA 105.01, complying with ASTM D 578 and the following requirements for minimum weight:

1. Heavy-Duty/Dryvit Panzer Mesh: 20.0 oz./sq. yd. at bottom panels (within 8 ft of walking surface).
2. Standard-Duty/Dryvit Standard Plus Mesh. Reinforcing Mesh: Not less than 6.0 oz./sq. yd.
3. Strip Reinforcing Mesh: Not less than 4.3 oz./sq. yd.
4. Corner Reinforcing Mesh: Not less than 7.2 oz./sq. yd.

H. Base-Coat Materials: System manufacturer's standard mixture complying with the following requirements for material composition and method of combining materials:

1. Job-mixed formulation of portland cement complying with ASTM C 150, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use indicated; “Genesis,” or equivalent.

2. At moisture-sensitive (non-vertical surfaces) provide “Dryflex”, a high percentage acrylic co-polymer material, which is mixed with Portland cement to produce a water-resistant base coat and adhesive.

I. Primer: System manufacturer's standard factory-mixed elastomeric-polymer primer for preparing base-coat surface for application of finish coat; “ColorPrime,” or equivalent.

J. Finish-Coat Materials: System manufacturer's standard mixture complying with the following requirements for material composition and method of combining materials:

1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, sound stone particles, and fillers; selected by Architect from “DPR Finish” textures and all available colors, or equivalent.

K. Water: Potable.

L. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with system manufacturer's written requirements, manufactured from vinyl plastic and complying with ASTM C 1063.

1. Drip Screed: Prefabricated one-piece type for attachment behind insulation, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and extended to form a drip; “Drainage Strip,” or equivalent.

M. Elastomeric Sealant Products: Provide silicone sealant in accordance with requirements of Division 07 “Joint Sealants“ Section and as recommended by EIFS system manufacturer.

N. Fasteners: Type recommended by EIFS system manufacturer based on substrate.

2.4 MIXING

A. General: Comply with system manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by system manufacturer. Mix materials in clean containers. Use materials within time period specified by system manufacturer or discard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of system. Proceed with installation of system only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect contiguous work from moisture deterioration and soiling caused by application of systems. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.

B. Protect system, substrates, and wall construction behind them from inclement weather during installation. Prevent infiltration of moisture behind system and deterioration of substrates.

C. Prepare and clean substrates to comply with system manufacturer's written requirements to obtain optimum bond between substrate and adhesive for insulation.

3.3 SUBSTRATE PROTECTION APPLICATION

A. Air and Moisture-Resistive Weather Barrier: Apply over sheathing to provide an air and water-resistive barrier.

1. Tape and seal joints, exposed edges, terminations, and inside and outside corners of sheathing unless otherwise indicated by EIFS manufacturer's written instructions.

B. Flexible Flashing: Install over weather-resistive barrier, applied and lapped to shed water; seal at openings, penetrations, terminations, and where required by EIFS manufacturer. Prime substrates if required and install flashing to comply with EIFS manufacturer's written instructions and details.

3.4 TRIM INSTALLATION

A. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints, at windowsills, and elsewhere as indicated. Coordinate with installation of insulation.

1. Weep Screed/Track (Drainage Strips): Use at bottom termination edges, at window and door heads, and at floor line expansion joints of water-drainage EIFS unless otherwise indicated.
2. Window Sill Flashing: Use at windows unless otherwise indicated.
3. Expansion Joint: Use where indicated on Drawings.
4. Casing Bead: Use at other locations.

3.5 INSTALLATION

A. Comply with ASTM C1397 and the EIFS manufacturer’s system application instructions. Apply base coat sufficient to fully embed the reinforcing mesh. The recommended method is to apply the base coat in two (2) passes

B. Board Insulation: Adhesively attach insulation to substrate in compliance with ASTM C 1397 and the following:

1. Apply adhesive to insulation by notched-trowel method, with notches oriented vertically to produce drainage channels that remain functional after the insulation is adhered to substrate.

2. Press and slide insulation board into place. Apply pressure over the entire surface of the insulation board to accomplish uniform contact, high initial grab, and an overall level surface.
3. Allow adhered insulation to remain undisturbed for period recommended by system manufacturer, but not less than 24 hours, before beginning rasping and sanding insulation, or applying base coat and reinforcing mesh.
4. Apply insulation boards over dry substrates in courses with long edges oriented horizontally. Begin first course from drip screed/drainage strip and work upward. Work from perimeter casing beads toward interior of panels if possible.
5. Stagger vertical joints in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than 12 inches (300 mm) wide or 6 inches (150 mm) high. Offset joints not less than 6 inches (150 mm) from corners of window and door openings.
    a. Offset joints of insulation not less than 6 inches (150 mm) from horizontal and 4 inches (100 mm) from vertical joints in sheathing.

6. Interlock ends at internal and external corners.
7. Abut boards tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between insulation boards. If gaps greater than 1/16 inch (1.6 mm) occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
8. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
9. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/32 inch (0.8 mm) from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch (1.6 mm).
10. Score substrates to receive finish system to profiles indicated on drawings.
11. Interrupt insulation for expansion joints where indicated.
12. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
13. Treat exposed edges of insulation board as follows:
    a. Wrap edges after installing insulation board and before applying field-applied reinforcing mesh.
    b. Wrap mesh of width required to extend not less than 2-1/2 inches (63 mm) onto substrate behind insulation board, cover insulation board edge, and extend not less than 2-1/2 inches (63 mm) onto insulation board face.
    c. Wrap edges of insulation board, except those forming substrates of sealant joints, by encapsulating with base coat, reinforcing mesh, and finish coat.
    d. Wrap edges of insulation board forming substrates of sealant joints within system or between system and other work by encapsulating with base coat and reinforcing mesh.

14. Treat edges of insulation board at trim accessories by extending base coat, reinforcing mesh, and finish coat over face leg of accessories.
15. Coordinate flashing installation with installation of insulation to produce a wall system that does not allow water to penetrate behind protective coating.

C. Install trim accessories at locations indicated according to system manufacturer's written instructions.

D. Install expansion joints at locations indicated, where required by system manufacturer, and as follows:

1. Where expansion joints are indicated in substrates behind EIFS.
2. Where EIFS adjoins dissimilar substrates, materials, and construction.
3. Where wall height changes.

E. Apply base coat to exposed surfaces of insulation in minimum thickness recommended in writing by system manufacturer, but not less than 1/16-inch (1.6-mm) dry-coat thickness.

F. Embed reinforcing mesh of type indicated below in wet base coat to produce wrinkle-free installation with mesh continuous at corners and overlapped not less than 2-1/2 inches (64 mm) or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written instructions. Do not lap reinforcing mesh within 8 inches (204 mm) of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are not visible.

1. Heavy-Duty/Panzer Mesh: 20.0 oz./sq. yd. at bottom panels (within 8 ft of walking surface).
2. Standard/Standard Plus Reinforcing Mesh: Not less than 6.0 oz./sq. yd.

G. Additional Reinforcing Mesh: Apply strip reinforcing mesh around openings extending 4 inches (100 mm) beyond perimeter. Apply additional 9-by-12-inch (230-by-305-mm) strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch-(200-mm-) wide strip reinforcing mesh at both inside and outside corners, unless base layer of mesh is lapped not less than 4 inches (100 mm) on each side of corners.

1. Embed strip reinforcing mesh in base coat before applying first layer of reinforcing mesh.

H. Double Base-Coat Application: At lower panels, apply second base coat in the same manner and thickness as first application, with standard reinforcing mesh. Do not apply until first base coat has cured.

I. Apply tinted primer over dry base coat according to system manufacturer's written instruction.

J. Apply finish coat over dry primer, maintaining a wet edge at all times for uniform appearance, in thickness required by system manufacturer to produce a uniform finish of color and texture matching approved sample and mock-ups.

3.6 INSTALLATION OF JOINT SEALANTS

A. Prepare joints and apply sealants, of type and at locations indicated, to comply with applicable requirements in Division 07 Section "Joint Sealants" and EIFS manufacturer's instructions.

1. Clean surfaces to receive sealants to comply with indicated requirements and system manufacturer's written instructions.
2. Apply primer recommended in writing by sealant manufacturer for surfaces to be sealed.
3. Install sealant backing to control depth and configuration of sealant joint and to prevent sealant from adhering to back of joint.
4. Apply masking tape to protect areas adjacent to sealant joints. Remove tape immediately after tooling joints, without disturbing joint seal.
5. Apply joint sealants after base coat has cured but before applying finish coat.

3.7 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform required special inspections.

B. EIFS will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports

3.8 CLEANING AND PROTECTING

A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive system coatings.

B. Provide final protection and maintain conditions, in a manner acceptable to Installer and system manufacturer, that ensure system is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 072419

SECTION 072726 - FLUID-APPLIED MEMBRANE AIR AND MOISTURE BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fluid-applied, vapor-permeable membrane air and moisture barriers.

B. Related Requirements:

1. Section 061643 "Gypsum Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.

1.2 DEFINITIONS

A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air-Barrier Assembly: The collection of air-barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review air-barrier requirements and installation, special details, mockups, air-barrier protection, and work scheduling that covers air barriers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.

B. Shop Drawings: For air-barrier assemblies.

1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
2. Include details of interfaces with other materials that form part of air barrier.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.

C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.

1. Install fluid-applied membrane air barriers system on mockups of exterior wall systems specified in other specification sections to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
   a. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
   b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Remove and replace liquid materials that cannot be applied within their stated shelf life.

B. Protect stored materials from direct sunlight.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air-barrier manufacturer.

1. Protect substrates from environmental conditions that affect air-barrier performance.
2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1.9 WARRANTY

A. Manufacturer's Warranty: Submit manufacturer's standard warranty form for membrane systems, include affirmation of waterproofing mock-up observation and approval as required by warranty provisions. Approval by manufacturer for warranty is required prior to system application. Submit manufacturer's "Request Form" and supporting documentation at completion of waterproofing application through the local Authorized Distributor of the materials.

1. Warranty Period: Five years from date of Substantial Completion.

B. Special Installer's Warranty: Installer's standard form in which installer agrees to repair or replace membranes that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

B. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.

2.2 PERFORMANCE REQUIREMENTS

A. General: Air barrier shall be capable of performing as a continuous vapor-retarding air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

A. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. when tested according to ASTM E 283, ASTM E 783, or ASTM E 2357.

2.3 HIGH-BUILD VAPOR-PERMEABLE MEMBRANE AIR BARRIER

A. Fluid-Applied, Vapor-Permeable Membrane Air Barrier: Synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 35 mils (0.9 mm) or thicker over smooth, void-free substrates.

1. Basis of Design Product: Provide Henry Company; Air-Bloc 17MR or one of the following:
   a. GCP Applied Technologies: Perm-A-Barrier VPL.
   b. ExoAir 230 by Tremco.

2. Physical and Performance Properties:

   a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
   b. Vapor Permeance: Minimum 12 perms; ASTM E 96.
   c. Ultimate Elongation: Minimum 200 percent; ASTM D 412, Die C.

2.4 ACCESSORY MATERIALS

A. General: Provide primers, transition strips, termination strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

B. Primer for self-Adhered Flashing: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.

   1. Basis of Design Product: Aquatac Primer by Henry Co., or equal.

C. Liquid Flashing: Moisture cure single-component elastomeric liquid-applied flashing containing Silyl-Terminated Polyether (STPE) polymer, designed to cure through reaction with airborne moisture.

   1. Basis of Design Product: Air-Bloc LF Liquid-Applied Flashing by Henry Co., or equal.

D. Counterflashing Strip: Modified bituminous, 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 32 mils (0.8 mm) of rubberized asphalt laminated to an 8-mil- (0.2-mm-) thick, cross-laminated polyethylene film with release liner backing.

   1. Basis of Design Product: Blueskin SA Self-Adhered Water Resistive Air Barrier by Henry Co., or equal

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
4. Verify that masonry joints are flush and completely filled with mortar.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with 26 gauge stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

H. Bridge isolation joints, expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 ACCESSORIES INSTALLATION

A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate.
3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.

4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip/flashing so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

1. Transition Strip/Flashing: Roll firmly to enhance adhesion.

F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with sealant.

G. Terminations:

1. Seal strips and transition strips around masonry reinforcing or ties and penetrations.
2. Seal top of through-wall flashings to air barrier with an additional 6-inch- (150-mm-) wide, transition strip.
3. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with sealant or liquid flashing.

H. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches (150 mm) beyond repaired areas in strip direction.

3.4 FLUID AIR-BARRIER MEMBRANE INSTALLATION

A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.

B. High-Build Membrane Air Barriers: Apply a continuous unbroken air-barrier membrane to substrates according to the following thickness. Apply air-barrier membrane in full contact around protrusions such as masonry ties.

1. Vapor-Permeable Membrane Air Barrier: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements, but not less than 35-mil (0.9-mm) dry film thickness, applied in one or more equal coats.

C. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.

D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner may engage a Project Inspector to perform inspections.

B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:

1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Continuous structural support of air-barrier system has been provided.
3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
4. Site conditions for application temperature and dryness of substrates have been maintained.
5. Maximum exposure time of materials to UV deterioration has not been exceeded.
6. Surfaces have been primed, if applicable.
7. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
8. Termination mastic has been applied on cut edges.
9. Strips and transition strips have been firmly adhered to substrate.
10. Compatible materials have been used.
11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

C. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.

D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.6 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than 30 days, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed membrane according to air-barrier manufacturer's written instructions.
2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION 072726

SECTION 073113 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.2 DESCRIPTION OF WORK

A. The work of this Section consists of the following:
All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules, and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Install asphalt shingle roofing and accessories on the new addition roof. Asphalt shingles shall match the existing shingles previously installed on the existing buildings.
2. Remove and restore asphalt shingle roofing, where new elevator shaft structures are being installed, and the chimney is being demolished.
3. Install new asphalt shingles which match the existing shingles, underlayment, ice and water shield, asphalt cement, fasteners, sealants and flashings.
4. Remove and restore existing snow guard system, gutters and downspouts where new elevator shaft structures are being installed, and the chimney is being demolished.
5. Coordinate the application of asphalt shingle roofing and roof accessories with construction of the new addition and elevator shaft structures.

B. Related Requirements

1. Masonry Maintenance	-Section 040100
2. Rough Carpentry	-Section 061000
3. EPDM Roofing	-Section 075323
4. Sheet Metal Flashings & Specialties	-Section 076200
5. Roof Accessories	-Section 077200

1.2 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm with not less than 5 continuous years experience installing asphalt shingle roofing systems similar to those required for this project.
2. The Installer shall provide a reference list of at least three projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:

A. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.

B. The Installer shall provide the reference list prior to contract award if requested.

3. The Installer shall directly employ the personnel performing the work of this section.

4. The Installer shall have a full time supervisor/foreman on the roof when roofing work is in progress. The Supervisor shall have a minimum of 5 years experience in roofing work similar in nature and scope to this project, and speak fluent English.

2. Pre-Roofing Conference: Meet at the project site, approximately one week prior to starting work, with the Architect, Owner, roofing system Manufacturer's representative, and other representatives concerned about the work, to discuss the following:

1. How the installation of asphalt shingles will be coordinated with the installation of ice and water shield, underlayment, metal and membrane flashings and other items to provide a watertight installation.

2. Commercial practice and the Manufacturer's instructions for handling and installing his products.

3. The condition of the substrate (deck), curbs, penetrations and other preparatory work needed.

4. Submittals, both completed and yet to be completed.

5. The construction schedule; availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

6. A schedule for Manufacturer and Architect Consultant inspections.

7. Forecasted weather conditions, and procedures for coping with unfavorable weather.

1.3 SUBMITTALS

1. Submit the following items far enough in advance to obtain approval prior to performing any work:

1. Pre-work building leakage / damage report.
2. Manufacturer's literature for all material, including recommended installation procedures.

3. Six full size shingle samples.
4. Samples of fasteners.
5. A sample of the Contractor’s Guarantee forms.
6. Material Safety Data Sheets.

2. Simultaneously provide all Material Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders.

3. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section.

4. Payment requisitions will not be processed until all submittals are received and approved.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

1. Deliver materials in sealed packages with the Manufacturer's and Underwriters' Laboratories, Inc. labels intact and legible.

2. Store material on raised platforms and cover it immediately upon delivery. Keep material dry until installed.

3. Do not stack bundles of shingles more than 4 feet high.

4. Store rolled goods on end.

5. Do not overload the structure when storing materials on the roof.

1.5 GUARANTEE

1. Provide Standard Manufacturer’s “Lifetime” Limited Warranty against manufacturing defects.

2. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a five year period beginning upon Final Completion:

    1. Defective work includes but is not limited to the following types of failure: leakage, delamination, lifting, loosening, splitting, cracking, and undue expansion.

    2. The Contractor's Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense.

    3. The Guarantee shall include the removal and replacement of items or materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

3. The Contractor's Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.

PART 2 - PRODUCTS

2.1 GENERAL

Provide the following products as specified herein:

2.2. ASPHALT SHINGLES:

A. Asphalt shingles shall be 5 layer laminated fiberglass architectural textured shingles as manufactured by CertainTeed under the trade name of Grand Manor Shingle, to comply with the following standards and characteristics:

1. ASTM Specification D-3462.
2. U.L. Class A Fire Rating.
3. U.L. Wind Resistant Rating.
4. Approximate Size: 36 inches long x 18 inches wide, 8 inch exposure.
5. Color as selected.

B . Utilize manufacturer’s starter shingles and special hip and ridge shingles.

2.2 ACCESSORY MATERIALS

A. Vapor Barrier over the thermal barrier:

Standard – 40 mil thick, slip resistant, rubberized asphalt adhesive sheet, backed with a layer of cross laminated polyethylene, with a release paper for peel and stick application directly to the prepared gypsum board: Vycor Ice& Water Shield.

B. Ice and Water Shield on the roof deck directly beneath the shingles:

1. Standard – 40 mil thick, slip resistant, rubberized asphalt adhesive sheet, backed with a layer of cross laminated polyethylene, with a release paper for peel and stick application directly to prepared substrate: Vycor Ice& Water Shield.

2. High Temperature - 30 mil thick slip resistant, rubberized asphalt adhesive sheet, backed with a layer of cross laminated polyethylene, with a release paper for peel and stick application directly to prepared substrate: Vycor Ultra Ice & Water Shield.

3. Use high temperature ice and water shield where it is in contract with EPDM membrane and sheet metal flashings.

C. Underlayment: 7 mil synthetic polymer-based scrim-reinforced synthetic roofing underlayment: CertainTeed Roof Runner installed directly beneath the shingles to prepared substrate.

D. Asphalt Cement: Type 1, asbestos-free grade bituminous plastic cement complying with Federal Specification of SS-C-153B.

E. Fasteners:

1. Underlayment - galvanized or aluminum cap nails with low profile heads.
2. Shingles - Hot dipped, 12 gauge barbed shank, galvanized roofing nails, long enough to penetrate through the underside of the sheathing of minimum 1/4 inch.
3. Vented Naibase Insulation – Hunter Panels SIP Fasteners for steel deck.

F. Vented Nailbase Insulation: 3 inch thick composite board manufactured off-line by bonding 5/8 inch thick APA rated CDX plywood to a middle layer of solid wood spacers, creating a 1 inch air space, meeting ASTM C1289 Type II, Class 1, Grade 2, 20 psi isocyanurate foam - Hunter Panels Cool-Vent, with an R Value of 10.3

G. Isocyanurate Insulation: Flat rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2; 4 inches thick with an R Value of 23.6

H. Ridge Vents: High density rigid corrugated black polyethylene sections with integral factory installed snow screens that provide 20 square inches of net free ventilation area per lineal foot, Cor-A-Vent Model V-600E.

I. Soffit Vent: High density rigid corrugated black polyethylene sections that provide 10 square inches of net free ventilation area per lineal foot, 1 inch by 1-1/2 inches nominal size, Cor-A-Vent Model S-400.

PART 3 - EXECUTION

INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.1 PREPARATION

A. Remove existing sloped roofing materials only where indicated. Remove all underlayment, protruding nails, bituminous mastic, caulking, and other material.

B. Repair and if needed refasten the roof deck, to assure that all surfaces are restored to a condition which will properly support the new underlayment and shingles.

C. Maintain the buildings watertight in the interim.

D. Do not apply any new material over wet surfaces.

3.2 INSTALLATION

Install in accordance with manufacturer’s recommendations and as follows:

A. ICE AND WATER SHIELD

1. Install ice and water shield fully adhered to the entire deck substrate prior to installing the new insulation and vented nailbase insulation.

2. Install ice and water shield fully adhered to the nail board surface and metal drip edge to shed water at all roof eaves, extending from the eave up the slope a minimum of 6 feet, and at least 2 feet past the inside face of the building wall.

3. Install ice and water shield over the entire surface of dormers, around roof penetrations, and under and on each side of metal valleys.

4. Overlap ice and water shield plies 3 inches and end laps 6 inches, minimum.

5. Store ice & water shield between 60ºF and 80ºF when the outside temperature is 40ºF or below; install the ice & waster shield immediately after removing it from storage and quickly install fasteners for the shingles and flashings through the ice and water shield - to assure adhesion and self-sealing nail performance.

B. INSULATION AND VENTED NAILBASE INSULATION.

1. Install insulation over the ice and water shield with joints offset between rows a minimum of 12 inches. Cut the insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

2. Install vented nailbase insulation over the insulation with joints offset between rows and the first layer of insulation a minimum of 12 inches. Cut the vented nailbase insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

3. Fasten the vented nailbase insulation through the insulation with screws that penetrate into the concrete and wood plank decks a minimum of 1-1/2 inches. Install 24 fasteners per 4 by 8 foot nailbase insulation board.

C. UNDERLAYMENT

1. Install underlayment over the entire roof surface, directly under the shingles.

2. Lap underlayment plies 3 inches toward the eaves and 6 inches at the ends.

3. Fasten the underlayment with cap nails spaced 12 inches on center - along the ply lines, through the end laps, and in all directions through-out the sheet.

4. Lap underlayment at least 12 inches to form double thickness at ridges and hips.

5. Install underlayment to replace any underlayment disturbed or damaged as the existing shingles were removed.

D. Asphalt Shingles

1. Install asphalt shingles strictly in accordance with the requirements and recommendations of the Manufacturer, except as modified herein.

2. Utilize chalk lines and install the shingles with straight courses and uniform exposure. Do not exceed the Manufacturer's recommended course exposure.

3. Nail each strip of asphalt shingles with a minimum of 6 nails. Leave no exposed nails in the completed installation.

4. Fit shingles neatly around pipes, ventilators and other projections in roof.

5. Utilize manufacturer’s special hip and ridge shingles.

6. Form open valleys, which taper, increasing in size from the top to bottom.

7. Do not puncture the sheet metal flashings with nails, as the shingles are installed.

3.3 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leakage or damage which was not documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site presents a neat, orderly and workmanlike appearance. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION 073113

SECTION 074213.53 - COMPOSITE METAL WALL AND SOFFIT PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Metal-faced composite core wall panels used for soffits, fascia cladding, cornice cladding, copings, and other applications.
2. Metal wall panel accessories including closures, fasteners and clips, corners, flashings, and other components of wall panel system.
3. Wall panel stub framing system.
    a. Subframing required to support the composite core wall panel profiles indicated on the Drawings shall be part of the system designed under this Section.

B. Related Sections include the following:

1. Division 05 Section "Cold-Formed Metal Framing" for secondary support framing supporting metal panels.
2. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal panel and accessory.

B. Shop Drawings: Show fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment systems, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.

1. Include structural data indicating compliance with performance requirements. including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Indicate coordination dimensions related to structural support system elements provided by others.

C. Samples for Initial Selection:

1. Include Samples of trim and accessories involving color selection.
2. Include manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each sealant exposed to view

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches (300 mm) long by actual panel width. Include fasteners, clips, closures, and other metal panel accessories.
2. Trim and Closures: 12 inches (300 mm) long. Include fasteners and other exposed accessories.
3. Sealants: 12 inches (300 mm) long strips of cured sealants showing the colors to be provided for each sealant exposed to view

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Maintenance Data: For metal panels to include in maintenance manuals.

C. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain each type of metal panels through one source from a single manufacturer.

C. Mockups: Prior to installing composite metal wall panels, construct mockups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for Work.

1. Provide mock-up of roof fascia/soffit/coping assembly for each different configuration.
2. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Architect.
3. Include exposed sealant joint in mock-up.
4. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before start of Work.
7. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

D. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal wall panel systems including secondary

framing that are similar to those indicated for this Project in material, design, and extent.

E. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact joint sealants to joint-sealant manufacturers for testing indicated in subparagraphs below:

1. Use manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
   a. Perform tests under environmental conditions replicating those that will exist during installation.

2. Submit no fewer than nine pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule enough time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect strippable protective covering on metal panels from exposure to sunlight and high humidity, except to extent necessary for period of metal panel installation.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify locations of framing dimensions by field measurements before metal panel fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures, including rupturing, cracking, or puncturing.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Provide metal panel assemblies that comply with performance requirements specified as determined by testing manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.

B. Thermal Movements: Provide metal panel assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Air Infiltration: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of wall area when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa) for metal-faced composite core wall panels.

D. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa) for metal-faced composite core wall panels.

E. Structural Performance: Metal wall panel assemblies shall withstand the effects the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330:

1. Wind Loads: Determine loads based on the following minimum design wind pressures:
   a. Uniform pressure as indicated on Structural Drawings.

2. Deflection Limits: Metal wall panel assemblies shall withstand wind loads with horizontal deflections no greater than the following
   a. 1/175 of the span at the perimeter and 1/60 of the span anywhere in the panel for metal-faced composite core wall panels.

3. Secondary Framing: Design secondary framing system according to AISI "Standard for Cold-Formed Steel Framing - General Provisions."

2.2 PANEL MATERIALS

A. Aluminum Sheet: Coil-coated sheet, ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

2.3 MISCELLANEOUS METAL FRAMING

A. Steel Sheet Components, General: Complying with ASTM C 645 requirements for metal and with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.

B. Subgirts: C- or Z-shaped sections fabricated from 0.0598-inch (1.5-mm) bare steel thickness, shop-painted, cold-formed, metallic-coated steel sheet.

C. Base or Sill Angles and Channels: 0.079-inch (2.0-mm) bare steel thickness, cold-formed, galvanized steel sheet.

D. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
2. Depth: 7/8 inch (22 mm) unless otherwise indicated.

E. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (13-mm-) wide flange.

1. Depth: As indicated.

F. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch (0.79 mm).

G. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

H. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating.

1. Fasteners for Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM or neoprene sealing washer.

2.5 METAL-FACED COMPOSITE CORE WALL AND SOFFIT PANELS

A. General: Provide factory-formed and -assembled, metal-faced composite panels fabricated from two metal facings bonded, using no glues or adhesives, to solid, extruded thermoplastic core; formed into profile for installation method indicated. Include attachment system components and accessories required for weathertight system. Metal composite panel system shall be a full system that includes the sub-framing designed by system supplier’s professional engineer.

1. Surface-Burning Performance: Product shall have the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   a. Flame-Spread Index: 25 or less.
   b. Smoke-Developed Index: 450 or less.

2. Basis of Design Product: Provide Alucobond PLUS manufactured by 3A composites USA or equal products of one of the following:
   a. Arconic Architectural Products (USA).
   b. Mitsubishi Chemical Composites.

B. Aluminum-Faced Composite Wall Panels: Formed with 0.020-inch- (0.50-mm-) thick, coil-coated aluminum sheet facings.

1. Panel Thickness: 4 mm.
2. Core: Fire retardant core.
3. Exterior Finish for Aluminum: Three-coat fluoropolymer. AAMA 620/621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coats. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

a. Color: As selected by Architect from manufacturer’s full range.

C. Attachment System Components: Formed from extruded aluminum.

1. Include manufacturer's standard perimeter extrusions with integral weather stripping, panel stiffeners, panel clips and anchor channels as indicted or as required for a complete assembly.

D. System Installation Method: Rout and return wet seal.

E. Applications: Soffits, fascia, copings, cornice, trim, and other articulated exterior metal wall panels, and other applications indicated on Drawings.

F. Flashing and Trim Color: Same material, finish, and color as facings of adjacent panels

2.6 ACCESSORIES

A. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels, unless otherwise indicated.

2.7 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Fabricate metal wall panels in a manner that eliminates condensation on interior side of panel and with joints between panels designed to form weathertight seals

C. Metal-Faced Composite Wall Panels: Factory form panels in a continuous process with no glues or adhesives between dissimilar materials. Trim and square edges of sheets with no displacement of face sheets or protrusion of core material.

1. Form panel lines, breaks, and angles to be sharp and true, with surfaces free from warp and buckle.
2. Fabricate panels with sharply cut edges, with no displacement of face sheets or protrusion of core material.
3. Fabricate panels with panel stiffeners, as required to comply with deflection limits, attached to back of panels with structural silicone sealant or bond tape.
4. Dimensional Tolerances:
   a. Panel Bow: 0.8 percent maximum of panel length or width.
   b. Squareness: 0.25 inch (5 mm) maximum.

D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
3. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
4. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal panel manufacturer.
    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application but not less than thickness of metal being secured.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of work.

B. Examine primary and secondary framing to verify that structural panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before metal panel installation

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Framing: Install subpurlins, eave angles, furring, and other miscellaneous panel support members and anchorage according to metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION, GENERAL

A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Factory cut metal panels as required for penetrations and openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
   a. Field cutting of metal panels by saw or torch is not permitted.

2. Install metal panels perpendicular to structural supports, unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal panel manufacturer.

C. Joint Sealers: Install sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal panel manufacturer.

3.4 METAL WALL AND SOFFIT PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal wall panels.
2. Install flashing and trim as metal wall panel work proceeds.

B. Clip Installation: Attach panel clips to supports at each metal-faced composite wall panel joint at locations, spacings, and with fasteners recommended by manufacturer. Attach routed-and-returned flanges of wall panels to panel clips with manufacturer's standard fasteners.

1. Seal horizontal and vertical joints between adjacent panels with sealant backing and sealant. Install sealant backing and sealant according to requirements specified in Division 07 Section "Joint Sealants."
2. Install semi-rigid mineral wool between subframing for the clip installation system where indicated.

C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), nonaccumulative, on level, plumb, and location lines

as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.53

SECTION 075323 - EPDM ROOFING

PART 1 - GENERAL

1.1 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section

1.2 DESCRIPTION OF WORK

A. The work of this section consists of the following:
All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings, schedules, and keynotes, as specified, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Inspect the underside of the roof deck before starting work, and periodically each day as work occurs, to determine if there are conduits, pipes, ceiling hangers or fixtures, fireproofing and any other materials next to the deck or fastened to the deck that could be affected as roof work occurs.

    a. Perform the work so any conduits, pipes, ceiling hangers, fixtures, fireproofing and any other materials are not disturbed.

    b. Replace and reset any conduits, pipes, ceiling hangers, fixtures, fireproofing andare any other materials that are affected by the work.

2. Install a new fully adhered unreinforced 60 mil thick EPDM roofing system, including a thermal barrier and vapor barrier on the metal decks, insulation, a cover board, flashing, stripping and related accessories.

3. Install new flashings at the roof drains, and all roof-mounted and roof-penetrating equipment.

4. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

5. Install insulation, pavers and accessories at stair landing.

B. RELATED SECTIONS

1.	Masonry Maintenance	040100
2.	Roof Carpentry	061000
3.	Asphalt Shingles	073113
4.	Sheet Metal Flashing & Specialties	076200
5.	Roof Accessories	077200

1.3 CODE APPROVAL REQUIREMENTS

A. Install roofing and insulation system components to meet the following minimum requirements:

1. New York State Uniform Fire Prevention and Building Code, which includes by reference the New York State Energy Conservation Code.

2. Underwriters Laboratories Inc. Class A External Fire Rating for roof assemblies tested in accordance with ASTM E 108 or UL 790.

3. Underwriters Laboratories Inc. Standard 1256 for roof assemblies with foam insulation.

4. Minimum wind uplift pressure calculated using ASCE 7 and a safety factor of 2:
   a. Field Zone: 90 psf
   b. Perimeter Zone: 135 psf
   c. Corner Zone: 180 psf

B. Provide written certification from the roof material Manufacturer, before beginning work, to confirm the roofing system meets these requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the supervisor’s resume upon request.

   c. The Supervisor shall have a full-size paper set of plans & specifications with him, on the roof, at all times.

      1. Work shall not occur unless the Supervisor is present with the plans & specifications

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design within fifty miles of this project, which may be observed by representatives of the Owner:

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner’s name - contact person - phone number and address and the Architect’s name - contact person and phone number.

   b. Submit the reference list upon request.

3. The Installer shall be acceptable to or licensed by the Manufacturer of the primary roofing materials, and provide written certification from the Manufacturer to confirm this prior to award if requested.

B. Material Quality: Obtain each product, including the insulation, cover board, roof and flashing sheets, and the cements, primers and adhesives from a single Manufacturer which has manufactured the same products in the United States of America for not less than 5 continuous years.

C. Material Quality: Obtain each type of material from a single source to ensure consistent quality, color, pattern, and texture.

1.5 PRE-CONSTRUCTION

A. Meet at the project site approximately two weeks prior to starting work, with the Architect, Owner and other representatives to discuss the following:

1. How the thermal barrier, vapor barrier, insulation and EPDM roofing will be installed to make a watertight assembly.

2. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

3. The condition of the substrate (deck), curbs, penetrations and other preparatory work needed.

4. The construction schedule, weather forecast, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

5. A schedule for Manufacturer and Architect inspections.

1.6 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

1. A pre-work site and building inspection report with photos, to document conditions before work starts.
2. Written certification from the Manufacturer which states that the Installer is acceptable or licensed to install the specified roofing; if not previously provided.
3. Manufacturer's technical literature for all materials.
4. Samples of the Contractor’s Guarantee and Manufacturer’s warranty forms.
5. Test reports and certifications substantiating compliance with specification requirements, but only if requested by the Architect.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project. If an on-line program is not established, provide submittals in pdf format, organized in folders by Section.

    a. Do not include Safety Data Sheets with the technical submittals.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.7 JOB CONDITIONS (CAUTIONS & WARNINGS)

A. Do not use oil or solvent based roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to make contact with any roofing, insulation or flashing product. Do not expose EPDM roofing and accessories to a temperature over 175 degrees Fahrenheit.

B. Splice cleaner, primer, cements and bonding adhesives are flammable. Do not breathe vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed safety can or the Manufacturer’s original container.

C. Remove empty adhesive, cleaner and solvent containers and contaminated rags from the roof and legally dispose of them daily.

D. Do not apply primer, cleaners or adhesives next to ventilation system louvers or windows. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent odors from entering the building. Remove temporary covers at the end of each day’s work.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver and apply all materials before the Manufacturer’s expiration dates, printed on the product labels.

B. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

C. Cover all stored materials, except rolls of EPDM and sealed cans of adhesives, with watertight tarpaulins installed immediately upon delivery.

D. Immediately remove insulation which gets wet from the job site.

E. Store and install all material within the Manufacturer’s recommended temperature range.

F. Do not overload the structure when storing materials on the roof.

G. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.9 GUARANTEE AND WARRANTY

A. Provide a written Manufacturer's Full System Warranty which warrants that the roofing system, including the insulation, cover board, EPDM roofing and flashings, will remain in a watertight condition for twenty years beginning upon Final Completion.

1. Guarantee coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.

2. Guarantee coverage shall have no dollar value limit.

B. Provide a written Contractor's Guarantee which guaranties that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, joint separation, movement and undue expansion or shrinkage.

2. Guarantee coverage shall include the repairs and modifications necessary to enable the work to perform as guaranteed.

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

4. Guarantee coverage shall remain in effect for gust wind speeds up to 72 miles per hour, measured at ground level at the site.

5. Guarantee coverage shall have no dollar value limit.

6. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the five year term of the Contractor’s Guarantee.

C. Provide one Contractor’s Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

D. The Manufacturer’s Warranty and Contractors Guarantee shall take effect no more than 30 days before the completion of all punch list work.

E. Guarantee and Warranty coverage may be cancelled, for the affected portion of the roof, if the work is damaged by winds in excess of 72 mph, by hail, lightning, insects or animals, by failure of the structural substrate, by exposure to harmful chemicals, by other trades on the roof, or by vandalism, or if the Owner fails to maintain the roof in accordance with, or makes roof alterations contrary to, the Manufacturer’s printed recommendations.

1. Guarantee and Warranty coverage shall be reinstated, for the remainder of the original period; if the Owner restores the roof to the condition it was in prior to the damage occurring.

1.10 SUBSTITUTIONS

A. The following factors will be considered when evaluating a possible alternative to the roofing system specified:

1. The wording and intent of the warranty to be issued.

2. The financial status, numbers of years in business, and stability of the entity that will issue the warranty.

3. A reference list of at least five completed similar projects of comparable size, with a successful functional history of at least five years, within approximately fifty miles of the Project.

4. Technical aspects of the system, especially relating to durability, serviceability and performance.

5. The Manufacturer's ability and history providing technical support, on-site inspections and in progress assistance.

6. The availability and experience of local authorized applicators to install and maintain the proposed alternate system.

7. The Manufacturer's willingness and history responding to warranty claims previously made by the Owner, Architect or Consultant's involved in this project.

PART 2 - PRODUCTS

2.1 GENERAL

2.2 Provide the following products as specified herein:

A. EPDM roof system components are specified as products of Elevate Commercial Roofing System Company to establish a basis of design standard of quality. Equal products and systems from Johns Manville and Carlisle will be accepted.

B. Primary products required for this project include:

1. Gypsum board thermal barrier
2. Vapor barrier
3. Roof insulation
4. Cover board
5. EPDM roofing
6. Primers and adhesives
7. Sealants
8. EPDM flashing
9. Fasteners

2.3 EPDM

1. Unreinforced 60 mils thick, fire retardant, EPDM (Ethylene Propylene Diene Monomer) sheet membrane conforming to the following minimum physical properties.

PROPERTY	TEST METHOD	SPECIFICATION
Color	—	Gray/Black
Tensile Strength	ASTM D-412	1305 psi min.
Elongation	ASTM D-412	300% min
Tear Strength	ASTM D-624	150 lb/in min
Ozone Resistance	ASTM D-1149	No cracks, 7 days/100 pphm/100ºF/50% strain
Heat Aging	ASTM D-573	1200 psi min@ 200% elongation/4 wks/240ºF
Brittleness Temperature	ASTM D-746	-49ºF
Water Vapor Permanence	ASTM E-96	2.0 perm max
Thickness mils	ASTM D-412	60 mils plus/minus 6
Fire Retardant	UL Class A	

2.4 RELATED MATERIALS

A. Cleaners, adhesives, sealants, caulking and fasteners furnished by the EPDM system Manufacturer, that comply with low VOC regulations in effect at the time of application.

1. Stripping: 90 mil thick 5 inch and 9 inch wide self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 45 mils of cured seaming tape.

2. Bonding Adhesive: High strength contact adhesive.

3. Splice Adhesive: High strength synthetic polymer based contact cement formulated specifically to splice EPDM sheets.

4. Lap Sealant: EPDM rubber based gun grade sealant.

5. Water Block Seal: One component low viscosity butyl rubber sealant.

6. Pre-Molded Pipe Flashing: Pressure sensitive prefabricated flashings with pre-applied adhesive.

7. Pourable Sealer: Two component, solvent free polyurethane based sealant.

8. Reinforced Perimeter Fastening Strips: .030 inch thick reinforced cured EPDM.

9. Seam Tape Primer: Synthetic rubber polymer based primer designed to clean and prime seam tape spice areas prior to installing the tape.

10. Seam Splice Tape: Nominal 30 mil thick cured polymer self adhesive tape with release paper carrier, 6 inches wide.

11. Plates and Bars: Galvanized and corrosion resistant specialty products.

12. Fasteners: #14 Fluorocarbon polymer coated heavy duty screws.

B. Primer and Vapor Barrier.

1. Primer: Thin, cut black asphalt meeting ASTM D41

2. Vapor Barrier: Fire resistant torch grade SBS modified granular surfaced polyester and glass scrim reinforced cap sheet meeting ASTM D 6163 Type I, Grade G, furnished by the same manufacturer as the EPDM.

C. Insulation: Flat and tapered rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2, as manufactured by Firestone under the trade name of “ISO 95+ Isocyanurate Insulation”. Minimum thickness as shown on the roof plan.

1. Tapered insulation sloping 1/4 inch per foot.
2. Crickets sloping 1/2 inch per foot.

D. Gypsum Cover Board: 1/2 inch thick fire resistant gypsum board decking with inorganic glass mat facers and a water resistant core, formulated in 48 x 48 inch square edge boards, UL Class A, meeting ASTM C-1177, manufactured under the trade name Dens-Deck Prime.

E. Tapered edge strips – high density isocyanurate or wood fiberboard strips installed at the drain sumps, and insulation transition points.

F. Insulation adhesive: Two component low rise polyurethane foam adhesive, installed with a mixing extruding Pace Cart dispenser, or with a pleural heated foam rig, Firestone I.S.O. Adhesive.

1. Use insulation adhesive suitable for application at the intended application temperatures.
2. Do not use twin cartridge “caulking gun” adhesive except on very small isolated sections of roof.

PART 3 - EXECUTION

3.1 INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2 GENERAL

A. Install the new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced by the drawings and specifications.

B. Perform work next to roof mounted mechanical equipment, so the work coincides with equipment shutdown periods and does not affect building occupants. Temporarily cover and protect equipment openings, and windows next to the work area, with 6 mil fire retardant polyethylene, so dirt, dust and odors do not

enter the equipment or building. Remove covers as soon as the work is complete and at the end of each workday.

C. Clean substrate surfaces of all laitance, dirt, oil, grease or other foreign matter.

D. Remove all debris from within the flutes of metal decks.

E. Remove debris daily and as it is generated. Do not stock-pile debris on the roof. Do not leave any debris on the roof at the end of the day. Do not overload the roof structure when moving debris.

F. Install roof system components on dry surfaces only. Do not install any components when the weather and outside temperatures are not suitable in accordance with the Manufacturer's recommendations.

G. Complete all work including the equipment flashings, in sequence as quickly as possible so the smallest area possible is under construction at any one time. Complete the entire area of work begun each day, the same day, and make all exposed edges watertight at the end of each day's work.

H. Protect roof surfaces where material and equipment are placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

3.3 SUBSTRATE INSPECTION

A. Prior roofing installation, carefully examine the roof deck to confirm it is not damaged and it is secured to the underlying structure, installation is completed and ready for roofing installation.

B. Notify the Architect and Owner in writing if defects in the substrate are discovered.

3.4 VAPOR BARRIER

A. Install primer on the concrete decks.

B. Torch apply and fully adhere modified bitumen vapor barrier sheets to the primed substrate. Lap sheets at least 4 inches at the ply overlaps and at least 6 inches at the end laps.

C. Carefully install the vapor barrier sheets to achieve only minimum required bleed out.

D. Extend vapor barrier up vertical surfaces at the roof perimeter, and up and around all penetrations and curbs, and seal the vapor barrier to provide continuity of the building air/vapor envelope.

3.5 INSULATION AND COVER BOARD

A. Install tapered insulation that slopes ¼ inch per foot.

B. Install insulation crickets that slope ½ inch per foot.

C. Install tapered insulation neatly cut at all miters and transitions. Do not lace corner boards.

D. Install insulation with joints offset between rows and layers a minimum of 12 inches. Cut insulation to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

E. Fasten the gypsum board thermal barrier and all layers of insulation to metal decks, with screws and discs which penetrate through the deck a minimum of 3/4 inch and a maximum of 1-1/2 inches.

1. Install 16 fasteners per 4 by 8 foot insulation board in the field of the roof.
2. Install 28 fasteners per 4 by 8 foot insulation board in 8 foot wide perimeter zones.
3. Install 32 fasteners per 4 by 8 foot insulation board in 8 foot square corner zones.
4. Carefully choose the length and position of each screw to ensure the screws do not protrude through the underside of the deck where visible inside the school, and to ensure the screws do not damage conduits mounted on the underside of the deck.

F. Install gypsum cover board using low rise polyurethane foam adhesive applied in accordance with the Manufacturer's recommendations and to achieve the specified minimum uplift resistance, over the insulation with joints offset between rows and layers a minimum of 12 inches. Cut gypsum cover board to fit neatly at penetrations and joints. Fill any gap which is greater than 1/4 inch.

1. Install 3/4 inch diameter adhesive beads 12 inches on center in the field of the roof.
2. Install 3/4 inch diameter adhesive beads 6 inches on center in 8 foot wide perimeter zones.
3. Install 3/4 inch diameter adhesive beads 4 inches on center in 8 foot square corner zones.

G. Place 5 gallon pails half full of gravel or concrete on the insulation and gypsum cover boards to hold them firmly in position for at least 15 minutes while the low rise foam adhesive sets. Position the pails no more than 24 inches apart in all directions.

H. Remove and replace insulation and cover board without using pails of gravel or concrete ballast.

I. Install all layers of insulation and the cover board using low rise polyurethane foam adhesive on the concrete decks.

3.6 EPDM

A. Place EPDM roofing on the substrate without stretching it, and allow it to relax approximately one hour – before starting to adhere it to the substrate and form the seams.

B. Place adjoining sheets in the same manner lapping the edges to shed water.

C. Fully adhere EPDM to the substrate with bonding adhesive.

1. Open each can of adhesive and stir it with an electric paddle mixer for at least 5 minutes before applying the adhesive. Re-stir adhesive that isn't used within two hours of initial mixing.

2. Do not punch holes in cans of adhesive and use them in a “Better Spreader” without first opening the cans to mix them.

3. Replace used roller covers each day; discard covers after each day’s use.

4. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.

5. Roll the EPDM onto the dried bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.

D. Remove and replace EPDM roofing installed over improperly applied adhesive or with adhesive that was not stirred, and roofing installed over debris or with blisters, ridges, mole runs and similar deficiencies. Removal shall include the insulation and cover board assembly.

3.7 SPLICING

A. Form EPDM roof splices with 6 inch wide field applied seam tape, or with 3 inch wide factory applied seam tape.

1. Fold the top sheet back and clean mating surfaces using clean rags with splice wash.
2. Scrub a smooth coat of QuickPrime onto mating surfaces, with long strokes, and to obtain complete coverage, using approximately 1 gallon per 225 square feet. Do not allow the QuickPrime to glop, streak or puddle; allow it to dry to the touch before installing the seam tape.
3. Seam tape shall be positioned so 1/8 inch minimum and 1/2 inch maximum will be exposed at the seam edge when the seam is complete.
   a. Install 5 inch uncured EPDM stripping over any seam where the tape is exposed less than 1/8 inch or more than 1/2 inch.
4. Roll and allow the top sheet to fall freely into place without stretching or wrinkling it.
5. Pull splice tape release paper from within the seam and neatly mate the seam using hand pressure to rub the membrane together.
6. Immediately roll the splice with a 2 inch wide roller, using positive pressure, toward the outer edge of splice.

B. Install uncured EPDM target patches with rounded corners, over all T-Seam intersections.

3.8 PERIMETER FASTENING

A. Secure the EPDM at the perimeter of each roof level, and at eaves, penetrations, expansion joints and slope changes greater than 1 inch in 12 inches. Utilize surface applied discs or adhere the EPDM to continuous reinforced EPDM fastening strips. Secure the discs and EPDM fastening strips 12 inches on center.

3.9 FLASHINGS

A. Utilized cured EPDM for all flashings; utilize self-curing EPDM at corners and angle changes only where required by the Manufacturer.

1. Form flashing splices, and the splice between the flashing and main roof sheet with 6 inch seam tape.

2. Adhere the flashing to vertical surfaces with bonding adhesive.

3. Fasten the top edge of all flashings, positioning the fasteners 12 inches on center, to be covered by a cap flashing.

B. Install premolded pipe flashings wherever possible. Where premolded pipe flashings cannot be installed, use field wrapped flashings. Install sealant pockets as a last resort.

C. Remove existing pipe flashings and Kennedy type couplings and extend the vent pipes to finish a minimum of 18 inches above the roof surface.

1. Extend the pipes using the same type of pipe material as the original vent pipe.

2. Use solvent welded, threaded or no-hub couplings, positioned within the insulation layer to extend the pipes.

3.10 MISCELLANEOUS

A. Provide any miscellaneous roofing, flashing, caulking, and metal work needed to leave the work complete and entirely watertight, neatly and carefully executed in a thorough and workmanlike manner.

B. Use mechanics skilled and licensed in the trades to perform mechanical and electrical work. Provide new material, couplings, transition pieces, blocking, fasteners and the like needed to complete the work.

3.11 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos, no videos, to document any existing leak or damage, prior to performing any work on site.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that were not documented in the Contractor’s report, or repaired to the Owners satisfaction at the Contractor’s expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and

workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

3.12 ROOF INSPECTIONS BY MANUFACTURER

A. Arrange for the roofing Manufacturer, or his authorized representative, to make a minimum of three inspections in accordance with the following schedule and submit a written report of each inspection to the Architect.

1. First inspection during the first day of new roof installation.
2. Second inspection when roofing is approximately two thirds complete.
3. Final inspection at the completion of all work.

B. Provide 48 hours advance written notice to the Architect, so he may have a representative attend the inspections.

C. Submit the inspection reports within one week following each inspection.

1. Payment requisitions will not be reviewed nor approved until the inspection reports are received.

END OF SECTION 075323

SECTION 076200 - SHEET METAL FLASHINGS AND SPECIALTIES

PART 1 - GENERAL

1.1 Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.2 DESCRIBTION OF WORK

The work of this Section consists of the following:

A. All plant, labor, materials, equipment, testing and services necessary to complete the roof related sheet metal work shown on the drawings, schedules and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Sheet metal work that is compatible with the specified roofing systems, including cap and through wall flashings, hook strips, fascia, drip edges, gravel stops, factory fabricated roof edge systems, gutters, leaders, soffit panels, valleys and miscellaneous flashings.

B. Related Sections

1.	Masonry Maintenance	040100
2.	Roof Carpentry	061000
3.	Asphalt Shingles	073113
4.	EPDM Roofing	075323
5.	Roof Accessories	077200

1.3 CODE APPROVAL REQUIREMENTS

A. Fabricate and install roof perimeter flashings that comply with the NY State Uniform Fire Prevention and Building Code and with ANSI/SPRI ES-1 “Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems” requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

a. The Installer shall directly employ the personnel performing the work of this section.

b. The Installer shall have a supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

c. Submit the supervisor’s resume upon request.

d. The Supervisor shall have a full-size paper set of plans & specifications with him, on the roof, at all times.

e. Work shall not occur unless the Supervisor is present with the plans & specifications.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.

b. Submit the reference list upon request.

B. Material Quality:

1. Obtain each product from a single Manufacturer which has manufactured the same product in the United States of America for not less than 5 continuous years.

2. Obtain copper and pre-finished sheet metal items from the same mill run to maintain consistent color hue and surface finish.

C. Pre-Construction Conference: Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:

1. How the building will be kept watertight as work progresses.

2. How sheet metal work will be coordinated with the installation of the vapor barrier, insulation, cover board, roofing, flashings, roof accessories and other items to provide a watertight assembly.

3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

4. The condition of the substrate, curbs, penetrations and other preparatory work needed.

5. Incomplete submittals; note that progress payments will not be processed until all submittals are received and approved.

6. The construction schedule, weather forecast, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

7. A schedule for Manufacturer and Architect inspections.

1.5 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work on site:

1. A pre-work site and building inspection report with photos, no videos, to document conditions before work starts.

2. Manufacturer's technical literature for all materials.

3. Test reports and certifications substantiating compliance with specification requirements if requested by the Architect.

4. 2 foot long samples, for each sheet metal item, to show how it relates and fits on adjoining masonry and wood blocking assemblies, and with the roof, stripping, and flashings.

5. 6 inch square pieces of each type of sheet metal to show surface finish, texture and color.

6. A sample of the Contractor’s guarantee form.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

a. Do not make technical submittals via email

b. Do not include Safety Data Sheets with the technical submittals.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.6 JOB MOCK-UPS

A. After the submittals are approved, prepare in actual job locations, mock-ups of cap and through wall flashings, hook strips, drip edges, fascia, gravel stops, factory fabricated roof edge systems, copings, gutters, leaders, flat and standing seam panels, ridge covers, wall and soffit panels, and all other items of sheet metal and related work, for inspection and approval by the Architect.

B. Construct each mock-up of two full lengths of metal, fastened, connected and stripped-in to the related roofing system, to show the following:

1. Type, gauge, color, cross-sectional dimensions and shape, and joint and mitering techniques.

2. Related masonry work, wood blocking, and the attachment techniques and fasteners for all wood and metal components.

3. Other sheet metal related materials and their installation techniques to fully define the detailing of each mock-up.

C. Mock-ups shall be constructed to establish the minimum standard of materials and workmanship, and to assure that completed work which matches the mock-ups will be fully functional and serve the purpose for it has been designed.

D. Approved mock-ups may be left in place and incorporated into the permanent installation. Rejected mock-ups shall be removed and replaced until an acceptable mock-up is approved.

E. Do not purchase or fabricate sheet metal items until mock-up installation, inspection and approval are completed and approval is documented in writing.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

B. Cover all stored materials with watertight tarpaulins installed immediately upon delivery.

C. Do not overload the structure when storing materials on the roof.

D. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.8 GUARANTEE

A. Provide a written Contractor's Guarantee which guarantees that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: peeling paint, leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, and undue expansion.

2. Guarantee coverage shall include the repairs and modifications necessary to enable the work to perform as warranted. .

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect guaranteed repairs.

4. Guarantee coverage shall have no dollar limit.

B. Provide one Contractor's Guarantee that covers "all work performed" when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee coverage shall take affect no more than 30 days before the completion of all punch list work.

D. The Contractor's Surety Company may add a rider to the Performance Bond which clarifies that Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the five year term of the Contractor's Guarantee.

PART 2 - PRODUCTS

2.1 GENERAL

Provide the following products as specified herein:

A. Type 304 stainless steel sheet confirming to ASTM A240, 26 gauge thick for the thru-wall flashings (cap flashings embedded in masonry)

B. Copper sheet: ASTM B370, 99.0 % pure copper, thickness 16 ounces per square foot. Use copper for the shingle roof valley and step flashing and for all metal items not otherwise indicated.

C. Solder: Lead free / or pure tin solder, Number 497 by Johnson Manufacturing.

D. Flux: Water-Soluble Liquid Flux, Kester #3345 for iron soldering of brass and copper.

E. Tin-bearing flux such as "Flux-N-Solder E127 with pure tin" by Johnson Manufacturing.

F. Factory Fabricated Roof Edge System: Extruded aluminum anchor bars secured with #9 stainless steel screws spaced 12 inches on center and .050 inch thick Kynar 500 prefinished aluminum trim covers, independently tested to comply with the ANSI / SPRI ES-1 Wind Design Guide, provided by the roofing membrane manufacturer.

G. Shop fabricated aluminum fascias, hook strips, and miscellaneous trim for all other roof areas with #3105-H14 alloy aluminum, minimum thickness .040 inches unless otherwise indicated, factory finished with a Fluoropolymer Kynar 500 finish, color as selected by the Architect, from the full range of custom and standard colors.

H. Aluminum fascias, hook strips, gravel stops and miscellaneous trim: #3105-H14 alloy aluminum, minimum thickness .040 inches unless otherwise indicated, factory finished with a Fluoropolymer Kynar 500 finish, color as selected by the Architect, from the full range of custom and standard colors.

I. Exterior mounted gutters: 6 inch wide (K-Style), 0.032 aluminum, factory applied baked-on enamel finish. Color as selected by the Architect.

J. Exterior mounted downspouts: corrugated, 3”x4” , 0.027 aluminum, factory applied baked-on enamel finish. Color to match gutters.

K. Gutter guard: stainless steel micro-mesh.

L. Underlayment: one ply of high temperature ice & water shield

M. Glass Cloth: open mesh glass fabric coated on each side with plasticized asphalt as manufactured by Karnak Corporation or equal.

N. Asphalt cement: Federal Specification SS-C-153B, Type 1, asbestos free grade.

O. Sealant: High performance, solvent free, formulated and moisture curing silyl-terminated polyether sealant, ASTM C-920, Type S, Grade NS, Class 25, NovaLink construction sealant by ChemLink, color as selected.

P. Ice and Water Shield: high temperature 30 mil thick slip resistant butyl based adhesive coated sheet, with a plastic release layer for peel and stick application directly to a prepared roof deck: Vycor Ultra.

Q. Soffit panels: .032 inches aluminum soffit panels 0.56 inch thick and 12 inches wide factory finished with a Flouropolymer Kynar 500 Finish, color as selected from full range of colors, as manufactured by Elevate Commercial Roofing Systems, Una-Clad under the trades name UC-750 V-Groove. Provide half-vented panels

2.2 FABRICATION

Fabricate in accordance with manufacturer’s recommendation and as follows:

Accurately reproduce the details and design shown, and form profiles, bends and intersections, sharp, true and even. Fabricate sheet metal in the shop whenever possible, and form joints, laps, splices and connections to shed water and condensation in the direction of flow.

PART 3 - EXECUTION

3.1 INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2 INSTALLATION

Install in accordance with manufacturer’s recommendations and as follows:

A. Fabricate and install copper work in accordance with the current edition of "Copper and Common Sense" as published by the Revere Copper and Brass Company, unless otherwise indicated.

1. Form all joints, except loose locked sealant filled expansion joints, to overlap 2 inches.

2. Secure the joints with rivets spaced 1 inch on center positioned about 1/2 inch from the top edge of the joint, then sweat solder the joint.

3. Use solder only to fill and seal the joint, not for mechanical strength. Form soldered joints continuous, strong and free from defects, with well heated soldering irons. Do not use open flame torches for soldering.

4. Clean soldered joints daily, immediately after soldering, by washing them with soap and water applied with a soft bristle brush, then rinsing with clear water.

B. Securely fasten and anchor all work, and make provisions for thermal expansion. Submit details of expansion joints for approval. Install fasteners through one edge of metal only, use a hook strip on the other edge.

C. Use stainless steel pin Zamac type nail-in fasteners, or stainless steel screws and washers with neoprene inserts where fasteners will be exposed.

3.3 CAP FLASHINGS

A. Install new stainless steel flashings above all roof and roof flashing components, including copings, wall penetrating ducts and gravel stops. Install cap flashings built into masonry walls; as they are demolished as shown, and as they are constructed - properly joined to all related materials in a watertight manner.

1. Solder all joints in the new cap flashing, as described above, except form 2 inch wide flat locked sealant filled expansion joints a maximum of 32 feet on center.

2. Form the flashing to turn up 2 inches inside the wall and finish with a hem on the bottom exposed edge.

3. Fasten the top edge of the cap flashing to the back up masonry 12 inches on center.

4. Install the new cap flashing under flexible type wall flashings where possible. Where it is not possible to lap the new cap flashing under an existing wall flashing, install a ply of glass cloth set in and coated with asphalt cement to connect the new cap flashing to the existing wall flashing or to back up masonry surface.

5. At a solid masonry wall, turn up the new cap flashing 2 inches behind the first wythe of masonry.

6. Install new cap flashings where shown on the drawings, and at a height of 10 to 12 inches above the roof surface.

7. Install new cap flashings above parapet flashings and above eave metal at transitions with higher walls.

B. Install new aluminum cap flashings on skylight and equipment curbs.

1. Form the cap flashing to extend at least 2 inches under the equipment or skylight, 4 inches over the base flashing, and finish with a 1/2 inch hem on the bottom edge.

2. Install a 1/2 inch thick by 2 inch wide continuous foam gasket between the cap flashing and mechanical equipment or skylight. Do not set the equipment or skylight in sealant.

3. Secure the equipment or skylight to the curb with stainless steel screws spaced 12 inches on center.

3.4 DRIP EDGES

Fabricate drip edges to extend 2 inches past the roof edge, and turn down to ensure water cannot track back and run down the fascia. Secure the drip edge with roofing nails along the top edge, spaced 4 inches apart along the raw metal edge. Form joints in the drip edge with 6 inch wide concealed under plates which duplicate the profile of the drip edge. Set the underplates in a full bed of sealant.

3.5 HOOK STRIPS

A. Form continuous hook strips with locks that engage the superimposed trim piece a minimum of 3/4 inch, and to cover the entire underside edge of the wood blocking and neatly extend to the building wall.

B. Fasten hook strips along their bottom edge, just above the 45 degree bend, with nails spaced 4 inches on center into underlying wood blocking; Zamac type nail-in type fasteners spaced 8 inches on center into masonry surfaces, or screws spaced 8 inches on-center into sheet metal surfaces.

3.6 FASCIA

Fabricate new fascia to engage the hook strip 3/4 inch minimum and extend to the top of the wood fascia blocking. Secure the fascia with a continuous hook strip along the bottom edge and roofing nails along the top edge spaced 8 inches apart, positioned to be covered by the roof edge trim. Form joints in the fascia with 6 inch wide concealed under plates which duplicate the profile of the fascia. Set the underplates in a full bed of sealant.

3.7 MISCELLANEOUS FLASHINGS

A. Fabricate and install copper flashings at sloped roof areas including: valleys, crickets, chimneys, step flashing, vent pipe flashings, ventilator flashings, etc.

B. Install an 18 inch wide piece of ice shield to strip over the up-hill side of metal flashings, crickets, and over both sides of valley flashings.

C. Fabricate step flashings 1 inch longer than the unexposed length of a shingle, and to extend 4 inches up the wall and 4 inches onto the roof.

D. Fabricate apron flashings with 4 inch wide exposed faces which finish with 1/2 inch hems and rounded corners. Fasten the exposed face with stainless steel screws and washers with neoprene inserts spaced uniformly about 12 inches apart along the bottom edge.

3.8 SOFFIT PANELS

A. Install 'J' mold and trim pieces in full lengths, with the ends notched to form a telescoping 3 inch overlap. Face the overlaps to shed water, and where visible from the ground, away from prominent building entrance locations. Set the trim overlap into a full bed of sealant which matches the color of the trim.

B. Install panels straight with seams parallel, to achieve the design appearance indicated.

C. Fasten the panels to each roof rafter section with concealed stainless steel screws in each seam.

3.9 GUTTERS AND DOWNSPOUTS

A. Install seamless gutters that slope to the downspout outlet tubes, approximately 1/16 inch per foot.

1. Secure the gutters with hidden extruded aluminum fascia brackets spaced 12 inches on center. Fasten each bracket with two #10 by 1-1/2 inch long stainless steel screws.

B. Install the downspouts plumb and straight, extending from a drop tube in the gutter to the underground drain hub.

1. Secure the downspouts approximately 7 feet on center, with .050 inch thick by 1-1/4 inch wind straps - color to match the downspouts. Fasten each strap with 1/4 inch diameter Zamac nail-in anchors, with stainless steel pins.

2. Install aluminum wire basket strainers at all leader drop tube outlets.

3.10 CLEANING, PROTECTION AND WATERTIGHTNESS

A. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leaks or damage, prior to performing any other work on site.

B. The Owner will conduct a similar inspection at the completion of the work, and the Contractor will be charged for all leaks and damage that were not documented in the Contractor's report, or repaired to the Owners satisfaction at the Contractor's expense.

C. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

D. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

E. Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

F. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps, drain lines, leader heads and leaders. Do not allow debris to enter the drainage system.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1. Applicable provisions of the Conditions of the Contract and Division #1, General Requirements, govern work in this Section.

1.2 DESCRIPTION OF WORK

A. The work of this Section consists of the following:

All plant, labor, materials, equipment, testing and services necessary to complete the work shown on the drawings schedules and keynotes, as specified herein, and as may be required by conditions and authorities having jurisdiction, including, but not limited to, the following:

1. Roof specialties that are compatible with the roofing systems specified, including:
    a. Pre-fabricated curbs and equipment supports.
    b. Factory fabricated pipe curb portals
    c. Drains, drainpipes and couplings.
    d. Cast iron downspout boots
    e. Pipe insulation and fitting covers.
    f. Aluminum access hatches.
    g. Hatch safety rails.
    h. Steel roof access ladders.
    i. Roof walkway pads and concrete pavers.
    j. Snow guards
    k. Pavers, insulation and accessories at stair landing roof.

2. Prepare, prime and paint all roof top equipment, the access ladders, equipment support dunnage, bulkhead doors and frames (inside and outside) and other miscellaneous rooftop items indicated.
    a. Do not paint new equipment housings or galvanized steel ladders and stairs.

B. Related Sections:

1.	Masonry Maintenance	040100
2.	Roof Carpentry	061000
3.	Asphalt Shingles	073113
4.	EPDM Roofing	075323
5.	Sheet Metal Flashing & Specialties	076200

1.2 CODE APPROVAL REQUIREMENTS

A. Fabricate and install roof accessories that comply with the NY State Uniform Fire Prevention and Building Code.

1.3 QUALITY ASSURANCE

A. Installer Qualifications:

1. A firm (Installer) with at least 5 continuous years experience performing work similar to that required for this project, employing personnel skilled in the work specified.

   a. The Installer shall directly employ the personnel performing the work of this section.

   b. The Installer shall have a supervisor on the roof when work is in progress. The Supervisor shall have a minimum of 5 years experience with work similar in nature and scope to this project, and speak fluent English.

      1. Submit the supervisor's resume upon request.

   c. The Supervisor shall have full size paper copies of the plans and specifications on the roof with him at all times.

      1. Work shall not occur unless the Supervisor is present with the plans and specifications.

2. The Installer shall provide a reference list of at least three previously completed projects of comparable size and similar design, within fifty miles of this project, which may be observed by representatives of the Owner:

   a. The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number, and the Contractor's Supervisor's name.

   b. Submit the reference list upon request.

B. Material Quality: Obtain each product from a single Manufacturer which has manufactured the same product in the United States of America for not less than 5 continuous years.

C. Pre-Construction Conference: Meet at the project site between one and two weeks prior to starting work, with the Architect, Owner and other representatives concerned about the work, to discuss the following:

1. How the building will be kept watertight as work progresses.

2. How roof accessory work will be coordinated with the installation of the vapor barrier, thermal barrier, insulation, cover board, roofing, flashings, and other items to provide a watertight installation.

3. Generally accepted industry practice and the Manufacturer's instructions for handling and installing his products.

4. The condition of the substrate, curbs, penetrations and other preparatory work needed.

5. Incomplete submittals; note that progress payments will not be processed until all submittals are received and approved.

6. The construction schedule, forecast weather, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

7. A schedule for Manufacturer and Architect inspections.

1.4 SUBMITTALS

A. Submit the following items far enough in advance to obtain approval prior to performing any work:

1. A pre-work site and building inspection report with photos (no videos), to document conditions before work starts.

2. Manufacturer’s installation instructions and technical data sheets for each item. Material sample submittals are not needed unless requested to show color and texture.

3. Samples of the Contractor’s and Manufacturer’s guarantee/warranty forms.

4. Test reports and certifications substantiating compliance with the specification requirements, but only if requested by the Architect / Engineer.

B. Simultaneously provide all technical submittals needed for this project, for all technical sections, collated by section. Incomplete submittals will not be reviewed.

1. Submittals shall be prepared and made by the firm that will perform the actual work.

2. Provide electronic submittals via an on-line submittal exchange program if one is established for this project; if an on-line program isn't established, provide the submittals on portable USB drives in pdf format, organized in folders by Section.

a. Do not make technical submittals via email
b. Do not include Safety Data Sheets with the technical submittals.

C. Safety Data Sheets: Simultaneously provide all Safety Data Sheets needed for this project, for all specification sections - collated by section, in three ring binders. Provide two binders for each building.

D. Payment requisitions will not be processed until all submittals are received and approved.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver material to the site in the Manufacturer's original and unopened packaging, with intact and legible labels which identify the products and Manufacturers,

B. Cover all stored materials with watertight tarpaulins installed immediately upon delivery.

C. Do not overload the structure when storing materials on the roof.

D. Protect roof surfaces where material and equipment is placed on them, and where construction traffic occurs, with 6 mil fire retardant polyethylene, covered with 1-1/2 inch thick foam insulation, overlaid with 2 by 10 wooden planks.

1.8 GUARANTEE

A. Provide a written Contractor's Guarantee which guarantees that all work will remain free of material and workmanship defects and in a watertight condition for five years beginning upon Final Completion:

1. Defects include but are not limited to the following: peeling paint, leakage, adhesive separation, delamination, lifting, loosening, splitting, cracking, movement and undue expansion.

2. Guarantee coverage shall include the repairs and modifications necessary to enable the work to perform as warranted at his own expense.

3. Guarantee coverage shall include removing and replacing materials installed as part of the original work, if removal is needed to affect repairs.

4. Guarantee coverage shall have no dollar limit.

B. Provide one Contractor’s Guarantee that covers “all work performed” when a single contractor is awarded work specified in multiple Sections.

C. The Guarantee shall take affect no more than 30 days before the satisfactory completion of all punch list work.

D. The Contractor’s Surety Company may add a rider to the Performance Bond which clarifies that Performance Bond Coverage expires two years after Final Completion; i.e., Performance Bond Coverage does not run for the five year term of the Contractor’s Guarantee.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide the following products as specified herein:

Provide Manufacturer's standard units, modified as necessary to comply with the specified requirements. Fabricate each unit in a shop to the greatest extent possible, using the following components:

1. Aluminum Sheet: ASTM B 209 alloy 3003, tempered for forming and performance; mill finish, except as otherwise noted.
2. Extruded Aluminum: Standard extrusions alloy 6063-T52; 0.078 inch minimum thicknesses for primary framing and curb member legs, 0.062 inch thickness for secondary framing and covers; mill finish, except as otherwise indicated.
3. Stainless Steel angles and bearing plates: Standard chromium and chromium-nickel type stainless steel confirming to ASTM A240/A240M
    1. Stainless steel angle: fabricate from ¼" thick, type 304 stainless steel diamond tread plate, ASTM A793. Plate thickness to be ¼" plus thickness of the diamond treads
    2. Stainless steel bearing plates: ¼" thick, type 304 stainless steel
4. Insulation:
    1. Rigid fiber glass boards where encapsulated inside metal skirts, rigid isocyanurate where covered with roof flashings on the exterior of curbs.
    2. Extruded Polystyrene Insulation under pavers.
5. Protection mat
6. Drainage mat
7. Fiter Scrim
8. Pedestals
9. Concrete pavers
10. Wood Nailers: Dimension grade Douglas Fir, not less than 1-1/2 inches thick.
11. Fasteners: Nonmagnetic stainless steel or hot dipped galvanized steel, to match the finish of the material being fastened.
12. Gaskets: Tubular neoprene or polyvinyl chloride, or block sponge neoprene.
13. Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

A.2 PRE-FABRICATED CURBS AND EQUIPMENT SUPPORTS

1. Factory fabricated of welded 14 gauge galvanized steel, insulated with minimum 1-1/2 inch thick 3 pound density rigid insulation, with nominal 2 by 2 inch wood nailers and T bar reinforcing on sides longer than 36 inches; height to extend above the finished roof surface a minimum of 12 inches, Model ES-1 by Pate Inc.

2. Where the roof deck slopes more than 1/4 inch per foot, provide tapered curbs to match the slope, and install the equipment level.

A.3 FACTORY FABRICATED PIPE CURB PORTALS

1. Factory fabricated flashing systems, consisting of 9 inch high internally insulated galvanized steel curbs with 1-1/2 inch square wood nailers at the top edges, and 5 hole EPDM boots, with nipples that will accommodate pipes and conduits from 1/2 to 2-1/2 inches in diameter, with stainless steel hose clamps on each nipple - 5-Hole Pipe Portal Flashing System: C-555, by Portals Plus or equal.

A.4 DRAINS, DRAIN PIPES, AND COUPLINGS

1. Conventional cast iron bottom and side outlet roof drains, installed with drain receivers, under deck clamps, cast iron strainers, cast iron clamping rings and factory installed stainless steel gravel screens Series 1011 as manufactured by Jay R. Smith Manufacturing Company.

2. Match the drain outlet size and style to the building drain line, except if the drain line is a copper pipe, then furnish the drain body with a threaded outlet and use a male adapter to connect the drain body to the drain line.

3. Drain pipe: cast iron pipe with no hub fittings, minimum 3 inch diameter, and larger to match the existing building drain lines.

4. No-hub couplings: heavy duty rubber neoprene sleeve couplings with full length Type 304 stainless steel shields and at least 4 worm drive clamps, conforming to ASTM A564.

A.5 PIPE INSULATION AND FITTING COVERS

1. Insulation: minimum 1 inch thick pre-molded 3.5 lb. heavy density fiberglass pipe insulation with UL rated non-combustible service jackets.

2. .030 inch thick factory fabricated white PVC "Smoke Safe" fitting and drain bowl covers as manufactured by the Speedline Corporation, with a maximum Flame Spread Value of 25 and a maximum Smoke Developed Value of 50 in accordance with ASTM E8450.

A.6 ALUMINUM ACCESS HATCHES

1. Hatches constructed of welded 11 gauge mill finish aluminum, with 12 inch high curbs and integral cap flashings, heavy pintle hinges, compression spring operators, a spring latch with interior and exterior handles, an interior padlock hasp, and stainless steel hardware, as manufactured by the Bilco Company, in the sizes needed to fit the deck openings, and as indicated.

2. Provide 4 feet by 4 feet new roof hatch and safety rails at New Addition EPDM roof as indicated on the drawings.

3. Cut a new opening in the roof and roof deck and install a new 6 feet by 6 feet roof hatch and safety rails in a location to be designated by the Architect / Engineer at the existing EPDM roof.

A.7 HATCH SAFETY RAILS

1. Safety rails shall comply with OSHA Standard CFR 29 1910.23 and CFR 29 1910.27

2. Safety rails shall be bolted to the exterior surface of the curb above the flashing with 3/8 inch diameter stainless steel bolts, constructed of 1-1/2 inch diameter hot rolled

electrically welded tubing meeting ASTM A500 Grade B, sized and configured to provide a safety railing on four sides of the hatch 42 inches above the roof surface with a self closing gate supported with heavy duty hinges with 5/8 inch diameter pins - basis of design: Roof Hatch Safety Rails by SafePro Roof Top Fall Protection.

3. Safety rails and gate shall be powder paint coated, color shall be as selected by the Architect / Engineer.

A.8 STEEL ROOF ACCESS LADDERS

Fabricate ladders from 1-1/4 inch inside diameter steel pipe rails, spaced 22 inches apart, and 3/4 inch solid steel rebar rungs spaced 12 inches on center. Fit the rungs into drilled holes in the centerline of the rails, weld and grind the welds smooth. Extend the ladder rails and form goose-neck returns to finish 42 inches above the roof surface.

1. Exterior ladders: hot dip galvanize the ladder and mounting brackets after fabrication. Install with Type 316 stainless steel hardware.

2. Interior ladders: prime and paint

A.9 GAS LINE AND EQUIPMENT PIPE SUPPORTS

Factory fabricated adjustable pipe supports as manufactured by Miro Industries, Inc. Model 20-Base Strut-12.

A.10 ROOF WALKWAY PADS AND PAVERS FOR WALKWAY PADS

1. inches by 30 inches hard rubber black walkway pads manufactured by Elevate.

2. Pavers: 2 inches thick, 24 inches by 24 inches precast concrete pavers, natural buff color and finish, minimum 7500 psi compressive strength as manufactured by Hanover Architectural Products.

A11. ROOF WITH CONCRETE PAVERS

1. Pavers: 2 inches thick, 24 inches by 24 inches precast concrete pavers, natural buff color and finish, minimum 7500 psi compressive strength as manufactured by Hanover Architectural Products. Color: as selected by the Architect from full range of colors.

2. Paver Pedestals: High density polyethylene (HDPE) as manufactured by Hanover Architectural Products

a. Standard and high-tab, 7” wide and 5/8” thick with flexible leveling shims

b. Adjustable pedestals with flexible leveling shims

3. Fabric Scrim: AASHTO M288 Class 2, needle-punched, nonwoven polypropylene geotextile, 4.5 oz/sq yard filter fabric. Mirafi160N or approved equal.

4. Extruded Polystyrene Insulation (XPS): 2 inch thick, square edge, compressive resistance of 60 PSI, confirming to the following ASTM: D1621, D2126, C272, 203.Provide Owens Corning FOAMULAR 600 SE or approved equal.

5. Drainage mat: high-performance three-dimensional geocomposite drainage mat consisting of molded plastic sheet with a grid of dimples and a high strength geotextile sheet bonded to the top of dimples. Provide CCW MiraDRAIN 9000 drainage mat or approved equal

6. Protection mat installed directly over EPDM: Non-woven geotextile, 4.5oz/yard Elevate Protection Mat.

A.12 PAINT AND PRIMER

Alkyd base rust inhibiting exterior primer and high gloss finish paint for ferrous metal surfaces as manufactured by Tnemec or equal.

A.13 PIPE SNOW GUARDS ASSEMBLIES

3-pipe snow guard assembly consisting of ¾ inch inside diameter galvanized steel pipes, a 1/8 inch thick type 302 stainless steel base plate, and milled 6061-T6 aluminum snow guard block and flag as manufactured by Alpine Snow Guards, Model #225.

A.14 CAST IRON DOWNSPOUT BOOTS

Galvanized cast iron boot with integral cleanout for 3”x4” aluminum roof downspout, connected to the underground drainage. Zurn model Z192-24-CA

PART 3 - EXECUTION

3.1. INSPECTION AND ACCEPTANCE

Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2 INSTALLATION

Install in accordance with manufacturer’s recommendations and as follows:

A. General: Field measure existing openings. Comply with manufacturer's instructions and recommendations. Coordinate with the installation of roof deck, other substrates to receive specialty units, vapor barriers, roof insulation, roofing and flashing to ensure that each element of the work performs and fits properly, and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

B. PRE-FABRICATED CURB AND EQUIPMENT SUPPORTS

1. Install curb assemblies directly on the structural deck or block solid under the assembly to achieve the height shown and to install the curb assembly level.

2. Install new base and cap flashings prior to installing the mechanical equipment. Set mechanical equipment on 1/2 inch thick anti vibration pads.

C. FACTORY FABRICATED PIPE CURB PORTALS

1.Install factory fabricated pipe portal flashing systems at all HVAC units, and where more than one pipe or conduit penetrates the roof.

2.Install the portal curbs on wood blocking that matches the thickness of the roof insulation.

3.Disconnect and reconnect refrigerant, power, control and condensate lines and pipes as needed to install the pipes through the flashing nipples.

a. Install water cut off sealant between the lines / pipes and EPDM nipples, and then install a hose clamp on each nipple.

b. Remove and replace rubber nipples that are incorrectly cut or too large.

D. DRAINS, DRAINPIPES AND COUPLINGS

1. Modify the existing drain lines to properly connect to the new drain assemblies.

2. .Enlarge the hole in the deck and reinforce the deck to accommodate the new drain, and install the drain recessed below the roof surface to achieve maximum drainage.

3. Support the drain with a stamped sump drain receiver, secure it with an under deck clamp and patch the deck around the new drain.

4. Connect the new drain to the existing drain line to conform to all applicable codes, and insulate the underside of the drain body and drain line.

5. Install new drain pipes to slope 1/4 inch per foot, and support each section of pipe with a hanger, supported on a structural member or strut, on each side of every coupling. Do not rely on the couplings to support any weight. Do not hang the drain pipes from the roof deck.

E. PIPE INSULATION AND FITTING COVERS

1.Install insulation on all horizontal drain pipes, and on new vertical pipes installed to connect the new drains to the existing lines.

2.Install insulation on the undersides of the new drains.

3.Install white PVC fitting and drain bowl covers, and wrap the joints between fitting covers and pipe insulation jackets with 3 inch wide white PVC tape.

F. ROOF HATCHES AND GUARD RAILS

1. Cut and remove a portion of the existing deck and install new steel angles to reinforce the deck opening where new hatches are being installed at new locations.

2. Block solid under the hatch curb to support it at the level of the new roof; extend and restore the shaft liner.

3. Orient the hatches for proper egress, and install new flashings.

4. Install guard rails, fastened to the hatch frame, above the roof flashings.

G. STEEL ROOF ACCESS LADDERS

Install ladders at the interior and exterior locations shown. Support and secure each ladder at the top and bottom and at intermediate points spaced a maximum of 5 feet on center. Use bolted steel brackets, anchored with 1/2 inch diameter stainless steel epoxy set bolts. Space the ladders to provide 7 inches of toe clearance. Extend the rails of exterior ladders 42 inches above the roof surface, and goose-neck form them to provide additional support at the top of the ladder.

H. GAS LINE AND EQUIPMENT PIPE SUPPORTS

1.Install pipe supports spaced five feet on center over a concrete paver and a walkway pad.

2.Fasten pipes and conduits to the new pipe supports with new stainless steel clamps.

I. ROOF WALKWAY PADS AND CONCRETE PAVERS

1.Install concrete pavers to support small split system HVAC components.

2.Install pavers over a piece of hard rubber walkway pad on single ply roof systems.

3.Install hard rubber walkway pads to provide a path 2-1/2 feet wide where shown, and at all roof access points, i.e., doors, ladders and hatches, under concrete pavers used for conduit and pipe supports, and around all HVAC equipment.

3.Adhere each pad with five self adhesive strips - do not install the pads using three strips of tape as supplied by the manufacturer.

J. PAINTING

1. Scrape and wire brush roof top equipment, ladders, access doors and frames (both sides), the guard rail, and the vent pipes to remove loose and peeling paint and surface rust.

2. Install one coat of primer and two finish coats of paint using a brush or roller. Wait 24 hours for each coat of paint to dry before applying the next coat.

a. Do not paint new roof top equipment housings and galvanized ladders.

b. Do not paint over the manufacturer's labels.

K. PIPE SNOW GUARD ASSEMBLIES.

2. Position the brackets uniformly spaced, no more than 5 feet on center, in a straight line, approximately 2 feet above the roof eave. Secure each plate with six #14 stainless steel flat head wood screws.

3. Secure each snow guard pipe, with a pin installed in a 3/16 inch drilled hole, positioned through the center of the center bracket.

4. Install end caps at the ends of all snow guard pipes.

5. Join sections of pipe with couplings.

L. PAVER SYSTEM

1. Obtain approval of installed EPDM system from roof manufacturer warranty inspector and perform flood test before proceeding with installation of overburden components.

2. Plug the drains, fill roof with water covering entire roof and 2 inches above the roof surface. Keep the roof under water for 24 hours. Investigate for leaks and perform repairs if the test fails. Repeat the test until passing.

3. Loose -lay the approved protection mat directly across the EPDM membrane in accordance with manufacturer instructions. Do not puncture or damage EPDM. Overlap all sides and end laps by a minimum of 6 inches. Do not bond or adhere to the waterproofing membrane. Neatly cut the fabric around the drains and penetrations

4. Loose- lay the drainage mat over entire protection mat surface in the shingle manner to shed water to drains in accordance with manufacturer's instructions.

5. Loose- lay polystyrene insulation boards over protection mat. Install insulation boards tight to each other with no voids. Neatly cut insulation around roof penetrations.

B. Loose- lay filter fabric on top of the insulation and cover entire insulation boards.

C. Establish a primary grid line square to the building walls. Place the pedestals directly atop the drainage fabric according to the layout plan. Adjust pedestal height and level pedestal plate providing completely level top pedestal plate surface for the corners of the pavers.

D. Lower the 2-inch thick architectural concrete pavers squarely onto the pedestal quadrants, engaging the integrated structural spacer tabs.

E. Adjust individual pedestal or slip rubber leveling shims beneath corners to eradicate rocking or vertical lips between pavers.

M. MISCELLANEOUS

1. Provide and install any sealants needed, where shown or required.

2. Perform mechanical and electrical work using skilled and licensed workers.

3. Provide new material, couplings, transition pieces, blocking, fasteners and the similar accessories needed to complete the work.

N. CLEANING, PROTECTION AND WATERTIGHTNESS

1. Inspect the interior and exterior of the building and grounds, and submit a written report with photos to document any pre-existing leakage or damage, prior to performing any work.

2. The Owner will conduct a similar inspection at the completion of the work, and the. Contractor will be charged for all leaks and damage that were not documented in the Contractor’s report or repaired to the Owners satisfaction at the Contractor’s expense.

3. Provide any equipment, material and labor necessary to protect the site, the building, its contents and occupants, pedestrians, and surrounding landscaped and paved areas from damage due to the construction work or from inclement weather during construction.

4. Do not perform work during inclement weather. Protect incomplete work and the building from damage by inclement weather - which may occur unexpectedly. Make all work areas watertight at the end of each day's work.

5.Clean up all litter, refuse, rubbish, scrap materials and debris at least twice a day; at noon and at the end of the work day, so the roof and site are neat, orderly and workmanlike. Place the debris in a dumpster, and remove the dumpster from the site as soon as it is full or no longer being used.

6. Carefully and thoroughly clean the entire roof to remove all residual debris when all work is complete. After cleaning the roof, thoroughly clean all drain sumps and lines. Do not allow debris to enter the drainage system.

END OF SECTION 077200

SECTION 078100 - APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes sprayed fire-resistive materials (SFRM).

B. Locations of sprayed fire-resistive materials includes the following:

1. Floor construction including deck, beams and joists where indicated
2. Any other area indicated on the Drawings.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. UL Designs: For each UL Design proposed for use.

D. Shop Drawings: Framing plans, schedules, or both, indicating the following:

1. Extent of fireproofing for each construction and fire-resistance rating.
2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
4. Treatment of fireproofing after application.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and testing agency.

B. Product Certificates: For each type of fireproofing.

C. Evaluation Reports: For fireproofing, from ICC-ES.

D. Preconstruction Test Reports: For fireproofing.

E. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

B. Mockups: Build mockups to verify selections made under Sample submittals and to set quality standards for materials and execution and for preconstruction testing.

1. Build mockup of each type of fireproofing and different substrate as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Coordination: Coordinate installation of spray fireproofing with installation of ceiling-mounted supports and hangars for mechanical and electrical equipment installed by others.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups of fireproofing.

1. Provide test specimens and assemblies representative of proposed materials and construction.

B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.

1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
2. Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.
4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 44 deg F (7 deg C) or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.

B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise.

D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction and the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Primers, Sealers, and Undercoaters: 200 g/L.
2. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

E. Asbestos: Provide products containing no detectable asbestos.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

A. SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.

1. Basis of Design Product: Provide Isolatek International; Cafco Blaze-Shield II or equal.
2. Bond Strength: Minimum 150-lbf/sq. ft. (7.18-kPa) cohesive and adhesive strength based on field testing according to ASTM E 736.
3. Density: Not less than 15 lb/cu. ft. (240 kg/cu. m) and as specified in the approved fire-resistance design, according to ASTM E 605.
4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).
5. Combustion Characteristics: ASTM E 136.
6. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   a. Flame-Spread Index: 10 or less.

b. Smoke-Developed Index: 10 or less.

7. Compressive Strength: Minimum 1,440 lbf/sq. in. (68.9 kPa) according to ASTM E 761.
8. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
9. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
10. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
11. Air Erosion: Maximum weight loss of 0.025 g/sq. ft. (0.270 g/sq. m) in 24 hours according to ASTM E 859.
12. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G21.
13. Sound Absorption: NRC of 0.75 according to ASTM C423 for Type A mounting according to ASTM E795.
14. Finish: Spray-textured finish.
15. UL Designs:
    a. As required to achieve 2-hour fire-rating at floor beams, decking and joists.

16. Adjust thickness of sprayed on material for columns and beams (lintels) with W/D ratio less than the W/D ratio of the specified assembly, as described in UL Fire Resistance Directory, Design Information Section at the front of the directory.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:

1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.

C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.

E. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.

F. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

G. Patching Material: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction; Cafco Fiber Patch or equal.

2.4 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:

1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.

B. Verify that concrete work on steel deck has been completed before beginning fireproofing work.

C. Verify that roof construction, installation of roof-top HVAC equipment, and other related work is complete before beginning fireproofing work.

D. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.

E. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

2.5 PREPARATION

A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

B. Clean substrates of substances that could impair bond of fireproofing.

C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

E. For areas with spray material on beams only, and exposed steel deck, cover deck to limit overspray of materials. Remove protective covering upon completion

2.6 APPLICATION

A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Metal Decks:

1. Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.
2. Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.

E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

F. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

G. Extend fireproofing in full thickness over entire area of each substrate to be protected.

H. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

I. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.

J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.

K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

L. Cure fireproofing according to fireproofing manufacturer's written recommendations.

M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.

N. Finishes: Where indicated, apply fireproofing to produce the following finishes:

1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.

O. The substrate shall have a minimum ambient temperature before and after application as specified in the approved manufacturer’s written instructions. The area for application shall be ventilated during and after application as required by the approved manufacturer’s written instructions.

2.7 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections as required by the BCNYS, Subsection 1705.13, "Sprayed Fire-Resistant Materials."

B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design. See Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

C. Fireproofing will be considered defective if it does not pass tests and inspections.

1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

D. Prepare test and inspection reports.

2.8 CLEANING, PROTECTING, AND REPAIRING

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

D. Repair fireproofing damaged by other work before concealing it with other construction.

E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 078100

SECTION 078123 – INTUMESCENT FIREPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes mastic and intumescent fire-resistive coatings (MIFRC).

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review products, design ratings, restrained and unrestrained conditions, thicknesses, and other performance requirements.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Material List: Provide an inclusive list of required intumescent coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

B. UL Designs: For each UL Design proposed for use.

C. Shop Drawings: Structural framing plans indicating the following:

1. Extent of fireproofing for each construction and fire-resistance rating.
2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
4. Treatment of fireproofing after application.

D. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard dimensions.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of fireproofing.

C. Evaluation Reports: For fireproofing, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements..

B. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockup of each type of fireproofing and different substrate as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 PROJECT CONDITIONS

A. Apply waterborne coatings only when temperatures of surfaces to be coated and surrounding air are between 50 and 90 deg F (10 and 32 deg C).

B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 - PRODUCTS

2.1 INTUMESCENT COATING MATERIALS, GENERAL

A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

B. Source Limitations: Obtain fireproofing from single source.

C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Steel members are to be considered unrestrained unless specifically noted otherwise

D. Low-Emitting Materials: Products shall comply with VOC content limits of authorities having jurisdiction and the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

E. Asbestos: Provide products containing no detectable asbestos.

2.2 MASTIC AND INTUMESCENT FIRE-RESISTIVE COATINGS

A. Mastic and Intumescent Fire-Resistive Coating: Manufacturer's standard, water-based, factory-mixed formulation, and complying with indicated fire-resistance design:

1. Basis of Design Product: CAFCO SprayFilm WB 5 manufactured by Isolatek International, or the following equal (listed in the UL Designs indicated):
   a. ISOLATEK Type WB 5 manufactured by Isolatek International

2. Application: Designated for "interior general purpose" use by a qualified testing agency acceptable to authorities having jurisdiction.
3. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design.
4. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   a. Flame-Spread Index: 25 or less.
   b. Smoke-Developed Index: 450 or less.

5. Hardness: Not less than 80, Type D durometer, according to ASTM D 2240.
6. VOC Content: Zero.
7. UL Design No.:
   a. Architecturally Exposed Steel Including Beams and Columns: UL X650, UL N614 for a one hour rating.

8. Alternative Manufacturers: Subject to compliance with requirements, equal MIFRC products of the following manufacturers may be provided. Submit alternative UL Designs for approval prior to providing the alternative products.
   a. Albi Manufacturing, Division of StanChem Inc.
   b. Carboline Company, subsidiary of RPM International, Fireproofing Products Div.
   c. International Paint Limited, subsidiary of Akzo Nobel N. V.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Refer to Division 09 Section “Painting” for additional information on prime paint.

C. Decorative Topcoat: Finish paint specified in Division 09 Section “Painting”. Topcoat shall be suitable for application over applied fireproofing; of type recommended in writing by fireproofing manufacturer for each fire-resistance design.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:

1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.

B. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

B. Clean substrates of substances that could impair bond of fireproofing.

C. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.

D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

E. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

F. Extend fireproofing in full thickness over entire area of each substrate to be protected.

G. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

H. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

I. Cure fireproofing according to fireproofing manufacturer's written recommendations.

J. Do not install enclosing or concealing construction or apply finish paint coat until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.

K. Finishes: Apply fireproofing to produce surface finish matching approved mock-up.

L. Field Painting: Refer to Division 09 Section “Painting”.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by the IBC, 1704.11.

B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested

values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

C. Fireproofing will be considered defective if it does not pass tests and inspections.

1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

D. Prepare test and inspection reports.

3.5 CLEANING, PROTECTING, AND REPAIRING

A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

D. Repair fireproofing damaged by other work before concealing it with other construction.

E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 078123

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in fire-resistance-rate horizontal assemblies.
3. Penetrations in non-fire-resistance-rate horizontal assemblies.
4. Penetrations in smoke barriers, smoke partitions and smoke tight partitions.

B. Related Sections:

1. Section 078446 "Fire-Resistive Joint Systems" for joints in or between fire-resistance-rated construction and in smoke barriers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.

1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products

per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:

1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
   a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
   b. Classification markings on penetration firestopping correspond to designations listed by the following:
      1) UL in its "Fire Resistance Directory."
      2) Intertek ETL SEMKO in its "Directory of Listed Building Products."
      3) FM Global in its "Building Materials Approval Guide."

C. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.

C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Penetration Firestop Systems specified in the Schedule in Part - 3 include:
   a. Fire Barrier Products, 3M Fire Protection Products
   b. RectorSeal Corporation.

2. Subject to compliance with specified requirements, provide Penetration Firestop Systems (XHEZ) listed in Volume II of the UL Fire Resistance Directory (BXRH), by one of the following:
   a. Hilti, Inc.
   b. Nelson Firestop Products.
   c. RectorSeal Corporation.
   d. Specified Technologies Inc.
   e. 3M Fire Protection Products.
   f. Wiremold/Legrand

2.2 PENETRATION FIRESTOPPING

A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls, and fire partitions.
2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. Horizontal assemblies include floors and floor/ceiling assemblies.
2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.

D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.

E. W-Rating: Provide penetration firestopping showing no evidence of water leakage when tested according to UL 1479.

F. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

G. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

H. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

1. Permanent forming/damming/backing materials, including the following:
   a. Slag-wool-fiber or rock-wool-fiber insulation.
   b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
   c. Fire-rated form board.
   d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 FILL MATERIALS

A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

2.4 MIXING

A. For those products requiring mixing before application, comply with penetration firestopping manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.

2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.3 INSTALLATION

A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

C. Install fill materials for firestopping by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.

3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections.

B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.

C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

3.7 PENETRATION FIRESTOPPING SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.

B. For penetrations in non-fire rated horizontal assemblies, smoke barriers, smoke partitions and smoke tight partitions, provide systems tested for 1 hour unless otherwise noted.

C. Basis of Design Assemblies: Subject to compliance with requirements, provide the design indicated below or a comparable UL design by one of manufacturer’s listed in Part 2 above.

1. Schedule of construction components, type of penetrant, and U.L. Penetration Firestop Systems include, but are not limited to the following:
2. Schedule of construction components, type of penetrant, and U.L. Penetration Firestop Systems include, but are not limited to the following:

	P E N E T R A N T

	Metal Conduit	**Cable Tray[4]**	**Cables**	**Non-Insul. Metal Pipe**	**Insul. Pipe**	**FR Polypro-pylene Pipe**	**Insul. Metal Duct**
GWB Stud Wall, or Shaft Wall up to 2 Hr Rating	W-L-1001	W-L-4004	W-L-3001	W-L-1001	W-L-5011	W-L-2002	W-L-7006 [3]
CMU Wall up to 2 Hr Rating	C-AJ 1044	C-AJ-4003	C-AJ-3030	C-AJ-1044	C-AJ-5001	C-AJ-2001	C-AJ-7003[3], 7016[3]
Concrete Floor / Metal Deck 1 Hr Rated F and T-Rating[2]	C-AJ-1008	N/A	C-AJ-3029	C-AJ-1008	C-AJ-5002	F-A-2002	C-AJ-7009[5]
Concrete Floor / Metal Deck 2 Hr Rated F and T-Rating[2]	C-AJ-1008	N/A	C-AJ-3029	C-AJ-1008	C-AJ-5060	F-A-2002	N/A
Concrete Floor / Metal Deck up to 2 Hr F Rated[1]	F-A-1002	N/A	C-AJ-3030	C-AJ-1044	C-AJ-5001	F-A-2002	N/A

KEY TO NOTES

1. Penetration within wall cavity.
2. Penetration that does not fall within wall cavity, T-Rating required.
3. Up to 1 hour rating, submit engineered judgement firestopping system for this combination of penetrant, wall/floor assembly, and fire rating. Install fire dampers in 2-hour walls in accordance with manufacturer's instructions and testing agency requirements.
4. Where cable tray extends through wall.
5. For floor penetrations not enclosed above and below the floor with shaft wall.

D. Membrane Penetrations:

1. Firestop membrane penetrations by cables, pipes and conduit similar to through wall penetrations.
2. Provide putty pad box wrap firestopping for membrane penetrations in rated walls for electrical back boxes over 16 sq. inches, where any back boxes are located within 24 inches horizontal of another back box, or when total area of back boxes exceeds 100 sq in. in 100 sq. ft. of wall area.

E. Where another type of construction or penetrant is encountered, or if field conditions vary from those described in the U.L. System listed (i.e. annular space is greater/smaller, insulation type varies, etc.), provide firestopping systems which are appropriate, and U.L. tested, for that condition.

END OF SECTION 078413

SECTION 078446 - FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Joints in or between fire-resistance-rated constructions.
2. Joints in smoke barriers.

B. Related Sections:

1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.

1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm experienced in installing fire-resistive joint systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its fire-resistive joint

system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.

B. Fire-Test-Response Characteristics: Fire-resistive joint systems shall comply with the following requirements:

1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
2. Fire-resistive joint systems are identical to those tested per testing standard referenced in "Fire-Resistive Joint Systems" Article. Provide rated systems complying with the following requirements:
   a. Fire-resistive joint system products bear classification marking of qualified testing agency.
   b. Fire-resistive joint systems correspond to those indicated by reference to designations listed by the following:
      1) UL in its "Fire Resistance Directory."

C. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure fire-resistive joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

C. Notify Owner's testing agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 FIRE-RESISTIVE JOINT SYSTEMS

A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall

accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:

1. Joints include those installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies.
2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Grace Construction Products.
   b. Hilti, Inc.
   c. RectorSeal Corporation.
   d. Specified Technologies Inc.
   e. 3M Fire Protection Products.
   f. Tremco, Inc.; Tremco Fire Protection Systems Group.

C. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079.

1. L-Rating: Not exceeding 5.0 cfm/ft (0.00775 cu. m/s x m) of joint at 0.30 inch wg (74.7 Pa) at both ambient and elevated temperatures.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Grace Construction Products.
   b. Hilti, Inc.
   c. Johns Manville.
   d. RectorSeal Corporation.
   e. Specified Technologies Inc.
   f. 3M Fire Protection Products.
   g. Tremco, Inc.; Tremco Fire Protection Systems Group.

D. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

E. VOC Content: Fire-resistive joint system sealants shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

F. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings

required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:

1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply fill materials so they contact and adhere to substrates formed by joints.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Fire-Resistive Joint System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.

C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.7 FIRE-RESISTIVE JOINT SYSTEM / FIRESTOP JOINT SYSTEM SCHEDULE

A. Where UL-classified firestop joint systems are indicated, they refer to alphanumeric designations listed in UL's "Fire Resistance Directory" under product Category XHBN.

Firestop Joint System Location	**Basis-of-Design**	**Assembly Rating**	**Nominal Joint Width**	**Movement Capabilities [2]**
Floor-to-Wall				
Rated concrete masonry wall construction intersection with adjacent floor construction	FW-D-1012, FW-D-1013	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Class II
Head-of-Wall				
Rated gypsum wall construction intersection with steel floor deck above	HW-D-0087, or HW-D-0089	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Class II or III,
Rated gypsum wall construction intersection with concrete floor deck above	HW-D-0083, HW-D-209	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Class II
Rated concrete masonry wall construction intersection with steel floor deck above	HW-D-0081, or HW-D-0098	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Class II
Rated concrete masonry wall construction intersection with concrete floor deck above	HW-D-0268, HW-D-0097	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Class II
Bottom-of-Wall				
Rated gypsum wall construction intersection with concrete floor	BW-S-0002	1 hour or 2 hours[1]	As indicated, or required by tested assembly	Static

1. Rating to match wall construction.
2. Class UL2079

B. Where another type of construction is encountered, or if field conditions vary from those described in the U.L. System listed (i.e. annular space is greater/smaller,

insulation type varies, etc.), provide firestopping systems which are appropriate, and U.L. tested, for that condition.

END OF SECTION 078446

ATTACHMENT: FIRESTOP JOINT SYSTEMS SUBMITTAL SHEET

3.8 FIRESTOP JOINT SYSTEMS SUBMITTAL SHEET

A. **HEAD-OF-WALL FIRESTOPPING:** Fill in the U.L. Design number and attach copy of U.L. Test. Insert n/a if condition is not applicable.

1. Gypsum wall construction intersection with floor deck above: _____. Gypsum wall construction intersection with roof deck above: _____.
2. Concrete masonry wall construction intersection with floor deck above: _____.
3. Concrete masonry wall construction intersection with roof deck above: _____.

B. **FLOOR-TO-WALL FIRESTOPPING:** Fill in the U.L. Design number and attach copy of U.L. Test. Insert n/a if condition is not applicable.

1. Concrete masonry wall construction intersection with adjacent floor construction: _____.

C. **BOTTOM-OF-WALL FIRESTOPPING:** Fill in the U.L. Design number and attach copy of U.L. Test. Insert n/a if condition is not applicable.

1. Gypsum wall construction intersection with floor deck: _____. Gypsum wall construction intersection with roof deck above: _____.
2. Concrete masonry wall construction intersection with floor _____.
3. Concrete masonry wall construction intersection with roof deck above: _____.

D. **CURTAIN WALL FIRESTOPPING:** Fill in the design number and copy test. Insert n/a if condition is not applicable.

1. Aluminum mullion and glass spandrel panel curtainwall intersection with adjacent floor construction:
2. Gypsum sheathed curtainwall intersection with adjacent floor construction: _____.

E. **OTHER:** Where another type of construction or penetrant is encountered, attach a separate sheet listing each condition and attach copy of the U.L. Test.

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes joint sealants for the following locations:

1. Exterior joints in the following vertical surfaces and nontraffic horizontal surfaces:

   a. Control and expansion joints in cast-in-place concrete
   b. Joints in stone veneer wall surfaces.
   c. Joints at cast stone trim units.
   d. Joints in brick veneer wall surfaces.
   e. Joints in composite metal wall panels.
   f. Joints in EIFS wall panels.
   g. Joints between different materials listed above
   h. Perimeter joints between materials listed above and frames of aluminum entrance and storefront framing, and frames of doors, louvers and windows.
   i. Control and expansion joints in ceiling and overhead surfaces.
   j. Other joints as indicated.

2. Exterior joints in the following horizontal traffic surfaces:

   a. Control, expansion, and isolation joints in cast-in-place concrete slabs.
   b. Other joints as indicated.

3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:

   a. Control and expansion joints on exposed interior surfaces of exterior walls.
   b. Perimeter joints of exterior openings where indicated.
   c. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
   d. Perimeter joints between interior wall surfaces and frames of interior doors, windows, storefront and entrance framing, and elevator entrances.
   e. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   f. Joints between countertops and adjoining walls.
   g. Tile control and expansion joints
   h. Openings and joints in sound-rated partitions.
   i. Other joints as indicated.

4. Interior joints in the following horizontal traffic surfaces:

   a. Control and expansion joints in tile flooring.
   b. Control and expansion joints in cast-in-place concrete slabs.
   c. Other joints as indicated.

B. Related Sections include the following:

1. Sealants used in glazing are specified in Division 08 "Glazing."
2. Coordinate work of this section with all sections referencing it.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.

C. Samples for verification purposes of each type and color of joint sealant required. Install joint sealant samples in 1/2-inch (13-mm)) wide joints formed between two 6-inch (150-mm) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

1.4 INFORMATIONAL SUBMITTALS

A. Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.

B. Qualification data complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project names addresses, names of Architects and Owners, plus other information specified.

C. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

D. Product test reports for each type of joint sealants indicated, evidencing compliance with requirements specified.

E. Preconstruction field test reports indicating which products and joint preparation methods demonstrate acceptable adhesion to joint substrates.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an installer who has successfully completed at least three (3) joint sealer applications similar in type and size to that of this project within the last five (5) years. All workers used for work of this Section shall be experienced in the techniques of sealant application and shall be completely familiar with the published recommendations of the manufacturer of the joint sealant materials being used.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Preconstruction Field Testing: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:

1. Locate test joints where indicated or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:
   a. Each type of elastomeric sealant and joint substrate indicated.
   b. Each type of non-elastomeric sealant and joint substrate indicated.

3. Notify Architect one week in advance of the dates and times when mock-ups will be erected.
4. Arrange for tests to take place with joint sealant manufacturer's technical representative present.
5. Test Method: Test joint sealants by hand pull method described below:
   a. Install joint sealants in 60 inches (1500 mm)) joint lengths using same materials and methods for joint preparation and joint sealant installation required for completed Work. Allow sealants to cure fully before testing.
   b. Make knife cuts horizontally from one side of joint to the other followed by 2 vertical cuts approximately 2 inches (50 mm) long at side of joint and meeting horizontal cut at top of 2-inch (50-mm) cuts. Place a mark 1 inch (25 mm) from top of 2-inch (50-mm) piece.
   c. Use fingers to grasp 2-inch (50-mm) piece of sealant just above 1-inch (25-mm) mark; pull firmly down at a 90-degree angle or more while holding a ruler along side of sealant. Pull sealant out of joint to the distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.

6. Report whether or not sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

D. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:

1. Joints in field-constructed mock-ups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants specified in this Section.

E. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of the Division 01 Section covering this activity.

F. Random Field Tests: Periodically test sealants, in place, for adhesion, using methods recommended by sealant manufacturer. Promptly replace any sealant that does not adhere, fails to cure, or fails to perform as specified by the sealant manufacturer.

G. Field Water Test: Perform two field water tests on completed areas including as many conditions as possible. If leakage occurs during testing, repair as required, and re-test area and also test two additional locations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4 deg C).
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.9 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Manufacturer's Warranty: Provide written warranty agreeing to repair or replace, at no cost to Owner, defective materials for twenty (20) years, and workmanship for two (2) years from the Date of Substantial Completion. Defective materials and workmanship shall include, but are not limited to:

1. Deterioration, aging or weathering of the work;
2. Water leakage and/or air leakage;
3. Sealant loss of adhesion, loss of cohesion, cracking or discoloration;
4. Staining or discoloration of adjacent surfaces;
5. Joint failure due to building or joint movement up to the limits prescribed by the manufacturer;
6. Cracks or bubbles on sealant surface.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by Architect from manufacturer's standards or custom colors to match Architect's samples, as directed by Architect.

C. Additional Movement Capability: Where additional movement capability is specified, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements of ASTM C 920 for Uses indicated.

D. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

E. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project

2.2 LATEX JOINT SEALANT

A. Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, mildew-resistant, paintable latex acrylic-emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior locations involving joint movement of not more than plus or minus 5 percent.

1. Available Products: Subject to compliance with requirements, latex joint sealants that may be incorporated in the Work include, but are not limited to, the following:
   a. AC-20; Pecora Corporation.
   b. Tremflex 834; Tremco.
   c. ALEX PLUS; DAP .

B. Uses: General interior use, paintable.

2.3 MILDEW-RESISTANT SILICONE JOINT SEALANT

A. Single-Component Mildew-Resistant Silicone Sealant: Manufacturer's standard, non-modified, one-part, silicone sealant; complying with ASTM C 920, Type S, Grade NS, Class 25, Uses NT, G, A, and, as applicable to non-porous joint substrates indicated, O. Formulate sealant with fungicide and specifically intended for sealing interior joints with nonporous substrates and subject to in-service exposure to conditions of high humidity and temperature extremes.

1. Available Products: Subject to compliance with requirements, silicone joint sealants that may be incorporated in the Work include, but are not limited to, the following:
   a. 786 Mildew Resistant; Dow Corning.
   b. Sanitary 1700; GE Silicones.
   c. 898 Silicone Sanitary Sealant; Pecora Corporation.
   d. Tremsil 600 White; Tremco.

B. Uses: Interior use in wet locations, and all toilet and shower rooms.

2.4 NONSAG URETHANE JOINT SEALANT

A. Multicomponent Nonsag Urethane Sealant: Manufacturer's standard, non-modified, multi-part, nonsag urethane sealant; complying with ASTM C 920, Type M, Grade NS, Class 25, Uses NT, M, G, A, and as applicable to joint substrates indicated, O.

1. Available Products: Subject to compliance with requirements, urethane joint sealants that may be incorporated in the Work include, but are not limited to, the following:
   a. Dynatrol II, Pecora Corporation
   b. Sikaflex-2c NS, Sika Corporation
   c. Dymeric 240FC; Tremco.
   d. Masterseal NP 2; Master Builders Solutions Div., BASF

B. Uses: Interior use for exposed concrete or masonry wall control joints

2.5 SILICONE JOINT SEALANT

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100, for Use G, A, M, O; non-staining and field-tintable.

1. Basis of Design Product: Provide Pecora Corporation “890FTS” sealant or equal manufactured by one of the following:
   a. Dow Corning Corporation.
   b. GE Advanced Materials - Silicones
   c. Sika Corporation, Construction Products Division
   d. Tremco Incorporated

B. Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.

C. Uses: General exterior use.

2.6 POURABLE URETHANE JOINT SEALANT

A. Multicomponent Pourable Urethane Sealant: Manufacturer's standard, non-modified, two-part, urethane sealant; complying with ASTM C 920, Type M, Grade P, Class 25, Uses T, M, A and, as applicable to joint substrates indicated, O.

1. Available Products: Subject to compliance with requirements, urethane joint sealants that may be incorporated in the Work include, but are not limited to, the following:
   a. NR-200 Urexpan, Pecora Corporation
   b. Sikaflex 2c SL, Sika Corporation
   c. Masterseal SL 2; Master Builders Solutions Div., BASF

B. Uses: Interior or exterior use for level pavement or slab joints.

2.7 NONSAG URETHANE JOINT SEALANT

A. Multi-Part Non-Sag Urethane Sealant: Except as otherwise indicated, provide manufacturer's standard, non-modified, two-part, urethane sealant; complying with ASTM C 920, Type M, Grade NS, Class 25, Uses T, M, A and, as applicable to joint substrates indicated, O.

1. Available Products: Subject to compliance with requirements, urethane joint sealants that may be incorporated in the Work include, but are not limited to, the following:
   a. Sikaflex 2c NS; Sika Corp
   b. Dynatred, Pecora Corporation
   c. Masterseal NP 2; Master Builders Solutions Div., BASF

B. Uses: Interior or exterior use for pavement or slab joints where slope exceeds one percent.

2.8 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant: Non-sag (gun grade), non-flammable, latex-based sealant designed to limit sound transmission through interior STC-rated partitions. Sealant remains flexible and adhered to metal, wood, plaster, gypsum, and concrete after drying.

1. Maintains the STC rating of partitions with intersections and penetrations sealed with product: Tested by independent, accredited, NVLAP facility according to ASTM E 90.
2. Products: Provide one of the following:
   a. QuietZone Acoustic Sealant by Owens Corning.
   b. OSI GreenSeries SC-175 Draft & Acoustical Sound Sealant by Henkel Corporation
   c. Pecora AIS-919: Acoustical and Insulation Latex Sealant by Pecora Corporation
   d. Smoke ‘N’ Sound Acoustical Sealant by Specified Technologies Inc.

B. Uses: At penetrations through and intersections of sound-rated wall, floor and ceiling assemblies in order to preserve their ability to reduce airborne sound impact noise transmission.

2.9 JOINT SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
2. Manufacturer: Provide Cera-Rod manufactured by W.R. Meadows, Inc., or equivalent.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.10 JOINT FILLERS FOR EXTERIOR CONCRETE SLABS

A. General: Provide joint fillers of thickness and depth indicated, or if not indicated 1/2" thick by depth of joint.

B. Bituminous Fiber Joint Filler: Provide preformed strips of with asphalt binder encased between two layers of saturated felt or glass-fiber felt, complying with ASTM D 1751.

1. Protect top edge of joint filler during concrete placement with a metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint and seal with sealant.

2.11 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.

4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   a. Do not leave gaps between ends of joint fillers.
   b. Do not stretch, twist, puncture, or tear joint fillers.
   c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.

2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use

tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
   a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 079500 - EXPANSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Types of joints for which architectural joint systems are specified include the following:

1. Interior wall and ceiling joints.
2. Interior pedestrian joints
3. Exterior wall expansion joint.

B. Related Sections include the following:

1. Division 07 Section "Joint Sealants" for elastomeric sealants and preformed compressed-foam sealants without metal frames.
2. Division 07 Sections “Sheet Metal Flashing and Trim” and “Roofing Accessories” for expansion joint covers at roof.

1.2 DEFINITIONS

A. Architectural Joint System: Any filler or cover used to span, fill, cover, or seal a joint, except expanding foam seals and poured or foamed in-place sealants.

B. Cyclic Movement: Periodic change between widest and narrowest joint widths in an automatically mechanically controlled system.

C. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist passage of flame and hot gases through a movement joint.

D. Maximum Joint Width: Widest linear gap a joint system tolerates and performs its designed function without damaging its functional capabilities.

E. Minimum Joint Width: Narrowest linear gap a joint system tolerates and performs its designed function without damaging its functional capabilities.

F. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint opening typically expressed in numerical values (mm or inches) or a percentage of nominal value of joint width.

G. Nominal Joint Width: Width of linear gap indicated as representing the conditions existing when architectural joint systems will be installed or, if no nominal joint width is indicated, a width equal to the sum of maximum and minimum joint widths divided by two.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide factory-fabricated architectural joint systems capable of withstanding the types of loads and of accommodating the kinds of movement, and the other functions for which they are designed including those specified below, without failure. Types of failure include those listed in Appendix X3 of ASTM E 1399.

1. Pedestrian Traffic Joints: Support pedestrian traffic across joint.
2. Exterior Joints: Maintain continuity of weather enclosure.
3. Joints in Fire-Resistance-Rated Assemblies: Maintain fire-resistance ratings of assemblies.
4. Joints in Smoke Barriers: Maintain integrity of smoke barrier.
5. Other Joints: Where indicated, provide joint systems that prevent penetration of water, moisture, and other substances deleterious to building components or content.
6. Joints in Surfaces with Architectural Finishes: Serve as finished architectural joint closures.

1.4 SUBMITTALS

A. Product Data: Include manufacturer's product specifications, construction details, material and finish descriptions, and dimensions of individual components and seals.

B. Shop Drawings: For each joint system specified, provide the following:

1. Placement Drawings: Include line diagrams showing entire route of each joint system, plans, elevations, sections, details, joints, splices, locations of joints and splices, and attachments to other Work. Where joint systems change planes, provide Isometric Drawings depicting how components interconnect to achieve continuity of joint covers and fillers.

C. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each exposed metal and elastomeric material of joint system indicated.

1. Include similar Samples of material for joints and accessories involving color selection.

D. Samples for Verification: Full-size units 6 inches (150 mm) long of each type of joint system indicated; in sets for each finish, color, texture, and pattern specified, showing the full range of variations expected in these characteristics.

E. Product Test Reports: From a qualified testing agency indicating architectural joint systems comply with requirements, based on comprehensive testing of current products.

F. Research/Evaluation Reports: Evidence of architectural joint system's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain architectural joint systems through one source from a single manufacturer. Coordinate compatibility with adjoining joint systems specified in other Sections.

B. Product Options: Drawings indicate size, profiles, and dimensional requirements of architectural joint systems and are based on the specific systems indicated. Other manufacturers' systems complying with requirements may be considered. Refer to Division 01 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Products: The design for each architectural joint system specified in Part 2 "Architectural Joint Systems" Article below is based on the products named. Subject to compliance with requirements, provide either the named products or comparable products by one of the following:

1. M M Systems
2. Balco, Inc.
3. Construction Specialties, Inc.
4. Inpro
5. Watson Bowman Acme.

2.2 MATERIALS

A. Aluminum: ASTM B 221 (ASTM B 221M), alloy 6063-T5 for extrusions; ASTM B 209 (ASTM B 209M), alloy 6061-T6 for sheet and plate.

1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.

B. Preformed Seals: Single or multicellular extruded elastomeric seals designed with or without continuous, longitudinal, internal baffles. Formed to be installed in frames or with anchored flanges, in color indicated or, if not indicated, as selected by Architect from manufacturer's standard colors.

C. Strip Seals: Elastomeric membrane or tubular extrusions with a continuous longitudinal internal baffle system throughout complying with ASTM E 1783; used with compatible frames, flanges, and molded-rubber anchor blocks.

D. Compression Seals: Preformed, elastomeric extrusions having internal baffle system complying with ASTM E 1612 in sizes and profiles indicated or as recommended by manufacturer.

E. Fire Barrier: Manufacturer’s standard for fire ratings indicated on Drawings.

F. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, flexible moisture barrier and filler materials, drain tubes, lubricants, adhesives, and other accessories compatible with material in contact, as indicated or required for complete installations.

2.3 ARCHITECTURAL JOINT SYSTEMS

A. General: Provide joint systems of design, basic profile, materials, and operation indicated. Provide units with the capability to accommodate joint widths indicated and variations in adjacent surfaces.

1. Furnish units in longest practicable lengths to minimize number of end joints. Provide hairline mitered corners where joint changes directions or abuts other materials.
2. Include closure materials and transition pieces, tee-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous joint systems.
3. Frames for Strip Seals: Designed with semiclosed cavity that provides a mechanical lock for seals of type indicated.
4. Fire Barrier: Provide manufacturer’s standard fire barriers material where indicated on the Drawings, for fire ratings indicated.

B. Interior Ceiling-to-Ceiling Architectural Joint System: Metal frame and elastomeric seal for interior ceiling joints.

1. Basis-of-Design Product: Products by Inpro as follows:
   a. For Acoustical Ceiling Locations: Inpro Model 116-A24-050, or equal.
   b. For Gypsum Board Ceilings: Inpro Model 113-A07-050, or equal.

2. Nominal Joint Width: 2 inch.
3. Color of Elastomeric Seal: As selected by Architect.
4. Frame Material: Aluminum extrusions, mill finish.

C. Interior Wall-to-Wall Architectural Joint System: Metal frames and covers for interior wall-to-wall application.

1. Basis-of-Design Products: Construction Specialties, Inc. Model ASM-200 Series (or ASMC for corner conditions) or equal by one of the following:
   a. M M Systems .
   b. Balco, Inc.

2. Nominal Joint Width: 2 inches, unless otherwise indicated on the Drawings.
3. Type of Movement Capability: 50% Expansion and contraction.
4. Exposed Cover Material: Aluminum, clear anodized finish.
5. Concealed Frame Material: Aluminum, mill finish

D. Interior Floor-to-Floor Architectural Joint System: Metal frame and flush gasketed center cover for interior, pedestrian traffic joints. Units shall have surface mounted metal side frames for minimal bump.

1. Basis-of-Design Product: Model GFST Series by Construction Specialties or equal by one of the following:
   a. M M Systems
   b. Balco, Inc.

2. Nominal Joint Width: 2" unless otherwise indicated on Drawings.
3. Center Gasket: Elastomeric extrusion in colors as selected by Architect.
4. Frame and Plate Material: Aluminum extrusions, mill finish.

E. Exterior Expansion Joint / Waterproofing Joint System: Exposed elastomeric bellows type seal with concealed secondary elastomeric seal and aluminum retainer frame for exterior vertical joints in exterior walls.

1. Basis-of-Design Product: C/S Model SF-200 by Construction Specialties, or equal.
2. Nominal Joint Width: 2 inches.
3. Color of Exposed Elastomeric Material: As selected by Architect to match adjacent wall color.

2.4 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.5 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to architectural joint system manufacturer's written instructions.

B. Coordinate and furnish anchorages, Placement Drawings, and instructions for installing joint systems to be embedded in or anchored to concrete or to have recesses formed into edges of concrete slab for later placement and grouting-in of frames.

C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary to secure joint systems to in-place construction, including threaded fasteners with drilled-in expansion shields for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of joint systems.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for handling and installing architectural joint assemblies and materials, unless more stringent requirements are indicated.

B. Coordinate installation of architectural joint assembly materials and associated work so complete assemblies comply with assembly performance requirements.

C. Terminate exposed ends of exterior architectural joint assemblies with factory-fabricated termination devices to maintain waterproof system.

D. Install factory-fabricated transitions between building expansion-joint cover assemblies and roof expansion-joint assemblies to provide continuous, uninterrupted, watertight construction.

E. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required to install joint systems.

1. Install joint cover assemblies in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling.
3. Set covers in horizontal surfaces at elevations that place exposed surfaces flush with adjoining finishes.
4. Locate wall, ceiling, and soffit covers in continuous contact with adjacent surfaces.
5. Securely attach in place with required accessories.
6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches (75 mm) from each end and not more than 24 inches (600 mm) o.c.

F. Continuity: Maintain continuity of joint systems with a minimum number of end joints and align metal members. Cut and fit ends to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames. Adhere flexible filler materials, if any, to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.

G. Joint Systems with Seals: Seal end joints within continuous runs and joints at transitions according to manufacturer's written instructions to provide a watertight installation.

3.3 CLEANING AND PROTECTION

A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

END OF SECTION 079500

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following hollow-metal work:

1. Steel doors
2. Steel door frames
3. Fire-rated door and frame assemblies.
4. Transom frames, borrowed lite frames and sidelite frames.
5. Fire-rated frames

B. Related Requirements:

1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
2. Section 088000 “Glazing” for glazing inserted in hollow metal doors and frames..

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate preparation of shop drawings for hollow metal doors and frames with door hardware submittals specified in Section 087100. Shop drawings for work of this section will not be reviewed and approved until the hardware submittals in Section 087100 are submitted and approved.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.

2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4

B. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

C. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

D. Field quality control reports.

1.7 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies complies with qualifications set forth in NFPA 80, Section 5.2.3.1

B. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies complies with qualifications set forth in NFPA 101, Section 7.2.1.15.4

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Ceco Door Products; an Assa Abloy Group company.
2. Curries Company; an Assa Abloy Group company.
3. Republic Doors and Frames.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Light Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3. Provide for interior door and frame locations.

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:
   a. Type: As indicated in the Door and Frame Schedule.
   b. Thickness: 1-3/4 inches (44.5 mm).
   c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 16 gage 0.053 inch (1.3 mm)

d. Edge Construction: Model 1, Full Flush
e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
f. Basis of Design Product: Regent Door by Ceco Doors, or equal.

3. Frames:

a. Materials: Minimum thickness of 16 gage, 0.053 inch (1.3 mm), uncoated, steel sheet for the following locations:
1) Wood doors, unless otherwise indicated.

b. Materials: Minimum thickness of 14 gage, 0.067 inch (1.7 mm), uncoated, steel sheet (except provide metallic coated where door is metallic coated) for the following locations:
1) Level 3 steel doors
2) Wood doors at all leafs wider than 36-inches (914-mm), and all electrical rooms, storage rooms, machine rooms, mechanical rooms, and maintenance areas

c. Construction: Full profile welded.

4. Exposed Finish: Prime door and frames

2.4 FRAME ANCHORS

A. Jamb Anchors:.

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (51 mm) wide by 10 inches (254 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch (1.0 mm), and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at finish floor surface.

2.5 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Glazing: Comply with requirements in Sections 088000 "Glazing".

J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch (0.66 mm), steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches (152 mm) apart. Spot weld to face sheets no more than 5 inches (127 mm) o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.

2. Fire Door Cores: As required to provide fire-protection ratings indicated.
3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches (3.2 mm in 51 mm).
4. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
5. Jamb Anchors: Provide number and spacing of anchors as follows:
   a. Masonry Type: Locate anchors not more than 16 inches (406 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c., to match coursing, and as follows:

      1) Two anchors per jamb up to 60 inches (1524 mm) high.
      2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
      3) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.
      4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.

   b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:

      1) Three anchors per jamb up to 60 inches (1524 mm) high.
      2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
      3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
      4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.

c. Postinstalled Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.

6. Head Anchors: Two anchors per head for frames more than 42 inches (1067 mm) wide and mounted in metal-stud partitions.
7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
6. Where Pyrostop glazing is scheduled to be inserted into openings in hollow metal doors provide door manufacturer’s special window kit to accommodate thickness of glazing unit; Type 8 window kit by Curries, or equal.

2.7 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.8 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

a. At fire-rated openings, install frames according to NFPA 80.
b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
c. Install frames with removable stops located on secure side of opening.
d. Install door silencers in frames before grouting.
e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

   a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
   a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
   c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:
   a. Between Door and Frame Jambs and Head: 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
   b. Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
   c. At Bottom of Door: 3/4 inch (19.1 mm) plus or minus 1/32 inch (0.8 mm).
   d. Between Door Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.
1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

3.4 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and commissioning activities and to furnish reports to Architect.

B. Inspections:
1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
2. Egress Door Inspections: Inspect each door in Assembly occupancies equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Commissioning: Commissioning of all doors shall be performed by the installer supervised by an Architectural Hardware Consultant who is thoroughly knowledgeable of the various components and systems. Include the following:
1. Testing of opening force, closing device, complete closure of the door within clearance tolerances, and full engagement of latch(es) where required by door type.
2. Verify cleanliness of labels, fusible links and other components that cannot be painted.
3. Functional testing of automatic-closing or power-operated fire door assemblies and electrically controlled latching hardware or release devices shall be coordinated with all components of the electrically controlled system.
4. After all doors have been commissioned and prior their acceptance, the Architect, in consultation with the Owner, will select doors (at least one for each operational type) whose full range operation shall be demonstrated by the Contractor to the satisfaction of the Architect.

D. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

E. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

F. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

G. Prepare and submit separate inspection report for each egress door assembly indicating compliance with each item listed in NFPA 101.

H. Prepare and submit commissioning report of all doors.

3.5 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with MDO faces for opaque finish.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Division 08 Section "Hollow Metal Doors and Frames" for steel door frames.
2. Division 08 Section "Glazing" for glass in flush wood doors

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, louvers, and trim for openings. Include factory-finishing specifications. For acoustical doors, include test report for acoustical performance.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.
8. Provide schedule of doors based on door schedule included in contract documents

C. Samples for Initial Selection: For factory-finished doors, demonstrating manufacturer’s full range of available colors.

D. Samples for Verification:
1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish**.**
2. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.
3. Corner sections of doors, approximately 8 by 10 inches (200 by 250 mm), with door faces and edges representing actual materials to be used.

a. Provide Samples for each species of veneer and solid lumber required.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.
1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4

B. Sample Warranty: For special warranty.

C. Quality Standard Compliance Certificates: Indicating doors meet the specified performance level.

D. Field quality control reports.

1.5 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies complies with qualifications set forth in NFPA 80, Section 5.2.3.1

B. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies complies with qualifications set forth in NFPA 101, Section 7.2.1.15.4

C. Quality Standard: Comply with WDMA I.S.1A Architectural Wood Flush Doors (Standard Construction) unless more stringent requirements are specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during remainder of construction period.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

B. Contractor's Responsibilities: Replace doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Forte Opening Solutions
2. Oshkosh Door Company.
3. VT Industries, Inc. (formerly Eggers)

B. Source Limitations:
1. Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: WDMA I.S.1A Architectural Wood Flush Doors (Standard Construction).

1. Provide certification indicating that doors comply with requirements of WDMA I.S.1A for the performance grade specified.
2. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.

B. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C. After 5 minutes into the NFPA 252 test, the neutral pressure level in the furnace shall be established at 40 inches (1016 mm) or less above the sill. Provide “Category A” Positive Pressure Tested doors for all fire-rated wood doors.
1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
3. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile; UL category A. Comply with specified requirements for exposed edges.
4. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

D. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.

E. Particleboard-Core Doors:
1. Particleboard: ANSI A208.1, Grade LD-2, made with binder containing no urea-formaldehyde.
a. 5-inch (125-mm) top-rail blocking, in doors indicated to have closers.
b. 5-inch (125-mm) bottom-rail blocking, in doors and doors indicated to have kick, mop, or armor plates.
c. 4-1/2-by-10-inch (114-by-250-mm) lock blocks and 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

F. Structural-Composite-Lumber-Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.
a. Screw Withdrawal, Face: 700 lbf (3100 N).
b. Screw Withdrawal, Edge: 400 lbf (1780 N).

G. Mineral-Core Doors:
1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire-protection rating indicated.
2. Blocking: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated as needed to eliminate through-bolting hardware, and as follows:
a. 5-inch (125-mm) top-rail blocking.
b. 5-inch (125-mm) bottom-rail blocking, in doors indicated to have protection plates.
c. 5-inch (125-mm) midrail blocking, in doors indicated to have armor plates.
d. 4-1/2-by-10-inch (114-by-250-mm) lock blocks and 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

3. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
a. Screw-Holding Capability: 550 lbf (2440 N) per WDMA T.M.-10.

2.3 MDO-FACED DOORS FOR OPAQUE FINISH

A. Interior Solid-Core Doors:

1. faces: Medium Density Overlay (MDO)
2. Exposed Vertical Edges: Structural composite lumber
3. Core:
   a. Non-Rated Doors: Particleboard except provide doors with either glued-wood-stave or structural-composite-lumber cores instead of particleboard cores for doors with full light or 2 lights
   b. Fire-Rated Doors: Mineral core.

4. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
5. WDMA I.S.1-A Performance Grade: Extra Heavy Duty
6. Basis of Design Doors: Aspiro Series by Forte Opening Solutions, or equal.

2.4 LIGHT FRAMES AND LOUVERS

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

   1. Factory finish to match door faces.
   2. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use

B. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- thick, cold-rolled steel sheet; factory primed finished to match door faces; and approved for use in doors of fire-protection rating indicated on Drawings.

C. Where Pyrostop glazing is scheduled to be inserted into openings in wood doors provide door manufacturer’s special window kit to accommodate thickness of glazing unit.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Align and fit doors in frames with uniform clearances and bevels as indicated below. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
   1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 5/8 inch (16 mm) from bottom of door to top of threshold unless otherwise indicated.
      a. Comply with NFPA 80 for fire-rated doors.
   2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
   3. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

D. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Opaque Finish:

1. Grade: Premium.
2. Finish: WDMA OP/ AWS system 11 catalyzed polyurethane.
3. Color: As selected by Architect.
4. Sheen: Semigloss

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 08 Section "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
1. Install fire-rated doors according to NFPA 80.
2. Install smoke- and draft-control doors according to NFPA 105.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and commissioning activities and to furnish reports to Architect.

B. Inspections:
1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Commissioning: Commissioning of all doors shall be performed by the installer supervised by an Architectural Hardware Consultant who is thoroughly knowledgeable of the various components and systems. Include the following:
1. Testing of opening force, closing device, complete closure of the door within clearance tolerances, and full engagement of latch(es) where required by door type.
2. Verify cleanliness of labels, fusible links and other components that cannot be painted.
3. Functional testing of automatic-closing or power-operated fire door assemblies and electrically controlled latching hardware or release devices shall be coordinated with all components of the electrically controlled system.
4. After all doors have been commissioned and prior their acceptance, the Architect, in consultation with the Owner, will select doors (at least one for each operational type) whose full range operation shall be demonstrated by the Contractor to the satisfaction of the Architect.

D. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

E. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

F. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

G. Prepare and submit separate inspection report for each egress door assembly indicating compliance with each item listed in NFPA 101.

H. Prepare and submit commissioning report of all doors.

3.4 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 081433 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior stile and rail wood doors.
2. Interior stile and rail wood fire-rated doors.
3. Factory finishing stile and rail wood doors.
4. Factory fitting stile and rail wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Division 08 Section "Hollow Metal Doors and Frames" for steel door frames.
2. Division 08 Section “Glazing” for glass in doors

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of construction.

1. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:

.

1. Dimensions of doors for factory fitting.
2. Locations and dimensions of mortises and holes for hardware.
3. Locations and dimensions of glazed panels
4. Undercuts.
5. Fire-protection ratings for fire-rated doors.
6. Doors to be factory finished and finish requirements

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification: Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1

2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4

B. Sample Warranty: For special warranty

C. Field quality control reports.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain stile and rail wood doors through one source from a single manufacturer.

B. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies complies with qualifications set forth in NFPA 80, Section 5.2.3.1

C. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies complies with qualifications set forth in NFPA 101, Section 7.2.1.15.4

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in opaque plastic bags or cardboard cartons.

C. Mark each door on top and bottom edge with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during remainder of construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, and have warped (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty shall be in effect during the following period of time from date of Substantial Completion:

a. Interior Doors: Lifetime.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use only materials that comply with referenced quality standards unless more stringent requirements are specified.

B. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain added urea-formaldehyde resins.

2.2 STILE AND RAIL DOORS

A. Manufacturers:

1. VT Industries.
2. Forte Opening Solutionsl
3. Trustile Doors, a Marvin company

B. Construction, General:

1. Provide stock doors to the greatest extent possible before providing custom doors.
2. Panel Designs: Drawings indicate panel designs. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C. After 5 minutes into the NFPA 252 test, the neutral pressure level in the furnace shall be established at 40 inches or less above the sill. Provide "Category A" Positive Pressure Tested doors for all fire-rated wood doors.

1. Temperature-Rise Limit: At vertical exit enclosures and exit passageways in areas with no sprinklers, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure
2. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
3. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile; UL category A. Comply with specified requirements for exposed edges.

D. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.

E. Door Construction for Opaque Finish:

1. Door Faces: Medium Density Fiberboard (MDF)

2. Stile and Rail Construction: Provide structural composite lumber (SCL) stiles and rails.
3. Flat-Panel Construction:
   a. For non-rated doors, provide manufacturer's standard particle core panels.
   b. For fire rated doors, provide manufacturer's standard fire rated composite panels or MDF meeting fire ratings required.

4. Basis of Design Doors, Non-Rated: Aspiro Authentic Stile and Rail Doors, Paintable by Forte Opening Solutions, or equal.
5. Basis of Design Door, Fire-Rated: Aspiro Authentic Stile and Rail Doors, Paintable by Forte Opening Solutions, or equal.

F. Interior Doors:

1. Thickness: 1-3/4 "
2. Panel Design: Flat five panels doors; Aspiro A105A.
3. Stile and Rail Widths: As indicated on Drawings.
4. Flat Panel Thickness: Minimum 5/8"
5. Sticking: As selected by Architect from manufacturer's full range.

2.3 FABRICATION

A. Factory fit interior doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/2 inch (13 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 3/8 inch (10 mm) from bottom of door to top of threshold.

   a. Comply with NFPA 80 for fire-rated doors.

2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
3. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) on lock edge; trim stiles and rails only to extent permitted by labeling agency.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2.4 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Opaque Finish:

1. Grade: Premium
2. Finish: WDMA OP-6 / AWS System 11 catalyzed polyurethane
3. Color: As selected by Architect.
4. Sheen: Semigloss .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and substrates, with Installer present, for suitable conditions where wood stile and rail doors will be installed.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 08 Section "Door Hardware."

B. Install wood doors to comply with manufacturer's written instructions and with AWI quality standard, and as indicated.

1. Install fire-rated doors according to NFPA 80.
2. Install smoke- and draft-control doors according to NFPA 105.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and commissioning activities and to furnish reports to Architect.

B. Inspections:

1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Commissioning: Commissioning of all doors shall be performed by the installer supervised by an Architectural Hardware Consultant who is thoroughly knowledgeable of the various components and systems. Include the following:

1. Testing of opening force, closing device, complete closure of the door within clearance tolerances, and full engagement of latch(es) where required by door type.
2. Verify cleanliness of labels, fusible links and other components that cannot be painted.
3. Functional testing of automatic-closing or power-operated fire door assemblies and electrically controlled latching hardware or release devices shall be coordinated with all components of the electrically controlled system.
4. After all doors have been commissioned and prior their acceptance, the Architect, in consultation with the Owner, will select doors (at least one for each operational type) whose full range operation shall be demonstrated by the Contractor to the satisfaction of the Architect.

D. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

E. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

F. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

G. Prepare and submit separate inspection report for each egress door assembly indicating compliance with each item listed in NFPA 101.

H. Prepare and submit commissioning report of all doors.

3.4 ADJUSTING AND PROTECTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081433

SECTION 082250 - POLYESTER FACED DOORS AND ALUMINUM FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Fiberglass reinforced polyester (FRP) faced doors
2. Aluminum frames for FRP doors, including frames for sidelites and transoms.
3. Installation of hardware (except surface mounted hardware).

B. Related sections include the following:

1. Division 07 Section "Joint Sealants" for joint sealants installed as part of polyester faced doors and aluminum frames.
2. Division 08 Section "Door Hardware."
3. Division 08 Section “Glazing.”

1.2 SYSTEM DESCRIPTION

A. General: Provide polyester faced doors and aluminum framing systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Thermal Movements: Provide polyester faced doors and aluminum framing systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change(range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Structural-Support Movement: Provide polyester faced doors and aluminum framing systems that accommodate structural movements including, but not limited to, sway and deflection.

D. Dimensional Tolerances: Provide polyester faced doors and aluminum framing systems that accommodate dimensional tolerances of building frame and other adjacent construction.

1.3 SUBMITTALS

A. Product data including specifications, standard details, and installation recommendations for polyester faced doors and panels and aluminum frames including test reports certifying that products have been tested and comply with performance requirements, details of core and edge construction, trim for openings, and finish.

B. Shop drawings showing fabrication and installation of polyester faced doors, panels and frames. Include elevations of door design types, details of construction, location and installation requirements of door hardware and reinforcements, and details of openings.

1. Provide schedule of doors indicating sizes, locations, and other pertinent information using same reference numbers for details and openings as those on contract drawings.

C. Samples for Verification Purposes: Submit 6" square samples of each color of face sheet specified and 12" long sections of aluminum extrusions with specified finish system applied. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing limits of such variations.

1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Provide doors and frames produced by single manufacturer for entire Project.

B. Manufacturer Qualifications: Provide product series that has produced by the manufacturer for at least five years, for similar building type and size as this project.

C. Installer's Qualifications: Firm with not less than 4 years successful experience installing systems similar to those required.

D. Fire Performance Characteristics: Where indicated, provide class "A" fiber reinforced polyester faces with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

E. Design Criteria: The construction documents are based on a specific polyester door faced and aluminum frame system. Other manufacturer's system of similar and equivalent nature will be acceptable when, in Architect's judgement, differences do not materially detract from design concept or intended performance.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver doors cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to surface finishes.

B. Inspect doors upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inches high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inches spaces between stacked doors to promote air circulation.

D. Identify each door and frame with individual opening numbers which correlate with designation system used on shop drawings for door, frames, and hardware, using temporary, removable or concealed markings.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check openings by field measurement before fabrication to ensure proper fitting of work; show measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in work.

B. Coordinate work of this section with that specified in Section 087100 to ensure proper installation of hardware.

1.7 WARRANTY

A. Product Warranty: Provide manufacturer's standard written warranty agreeing to repair or replace polyester faced doors which fail in materials or workmanship within time period indicated below. Warranty shall included door manufacturer's guarantee that hardware installed by factory will be installed correctly and not come loose within time period indicated below.

1. Warranty period for doors and finish, and hardware installed by factory is ten years after date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Provide polyester faced doors, panels and aluminum frames manufactured by one of following:

1. Special-Lite, Inc.
2. Tubelite, Inc.
3. Commercial Door Systems.

2.2 MATERIALS

A. Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; comply with ASTM B 221 for extrusions and ASTM B 209 for sheet and plate.

B. Steel Reinforcement: Complying with ASTM A 36 (ASTM A 36M)) for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 (ASTM A 570M) for hot-rolled sheet and strip.

C. Fiberglass Reinforced Polyester Face Material: 0.120" minimum thickness, with color integral through full thickness of face sheet. Provide sandstone textured finish for doors and panels. Face material meeting the following performance criteria:

1. Impact Strength of Face Sheets: ASTM D 256, Izod Impact Strength, 15 foot pounds per inch of notch.
2. Abrasion Resistance of Face Sheets: ASTM D 1242, 25 cycles of Taber Abraser with CH-17 wheel with a 1000 gram load, not to exceed 0.029 percent weight loss.
3. Hardness of Face Sheets: ASTM D 2583, Barcol Meter Hardness Test, not less than 55.
4. Humidity Resistance of Face Sheets: ASTM D 570, water absorption not more than 0.40 percent weight gain after 24-hour immersion.
5. Ultra-Violet Degradation: Only slight color change, and negligible change in surface gloss and other physical properties after exposure to 500,000 Langleys.
6. Fire-Resistance and Flammability: Provide Class A rated faces for door faces of interior doors and for interior face of exterior doors and panels.
7. Basis of Design Product: SpecLite 3 FRP by Special Lite, or equivalent.

D. Core Material: Urethane foam of 5 pounds per cubic foot density for doors and panels.

E. Fasteners: Aluminum or stainless steel materials warranted by manufacturer to be non-corrosive and compatible with aluminum components, hardware, anchors and other components.

F. Brackets and Reinforcements: Manufacturer's high-strength aluminum extrusions. Provide manufacturer's standard reinforcement for each type of hardware required.

G. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

H. Sealants and joint fillers for joints at perimeter of door frames as specified in Division 07 Section "Joint Sealants."

2.3 DOORS

A. General: Provide manufacturer's standard flush style doors constructed of aluminum stiles and rails joined with steel tie rods, with polyester face sheets and foamed-in-place urethane inner core. Minimum thermal rating U-factor of 0.09.

1. Basis of Design Product: Provide Sandstone FRP Door Model SL-20 by Special Lite, or equivalent.
2. Color: As selected by Architect.
3. Door Configuration: As indicated on Drawings

B. Provide extruded aluminum 2-7/16" tubular stiles designed to accept specified hardware and a minimum extruded aluminum 2-5/16" top and bottom rails with legs for interlocking rigidity weather bar. Minimum thickness of 1/16 inches at face and 1/8 inch at hinge and concealed vertical stiles.

1. Meeting Stiles: Pile brush weatherseals. Extrude meeting stile to include integral pocket to accept pile brush weatherseals.
2. Bottom of Door: Install bottom weather bar with nylon brush weatherstripping into extruded interlocking edge of bottom rail.

C. Lock polyester face sheets in on all four sides by extruded interlocking edges which are integral part of stiles and rails. Snap in or applied door edge trim is not acceptable.

D. Miter or mortise and tenon corner joints and mechanically fasten with reinforcing brackets that incorporate concealed minimum 3/8" galvanized steel tie-rods at top and bottom with aviation type nuts.

E. Internally reinforce doors to receive specified hardware with .125 inch thick aluminum.

F. Foam-in-place core after the door is completely assembled.

2.4 FRAMES

A. Standard Frame: Provide tubular extruded aluminum frame members, 2 by 4-1/2 inch in size unless otherwise indicated on drawings, with minimum 1/8 inch thick walls and closed back. Fabricate with mechanical joints using heavy inserted reinforcing plates and concealed tie-rods or j-bolts. Supply with ½ by 1-1/4 inch door stop, with heavy duty weathering pile included.

1. Provide Tube Frame with Applied Stops, Model SL-245, by Special Lite, or equivalent.
2. Finish: Factory painted to match doors.

2.5 HARDWARE

A. Hardware is specified in Section 087100.

2.6 GLAZING

A. Glazing is specified in Section 088000.

2.7 FABRICATION

A. Factory-prefit and premachine doors for all hardware and to fit frame opening sizes indicated with the following uniform clearances and bevels:

1. Clearances: Not more than 1/8 inch at jambs and heads except between pairs of doors not more than 1/4 inch. Not more than 3/4 inch at bottom.
2. Comply with final hardware schedules and door frame shop drawings and with hardware templates.
3. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory premachining.

B. Complete fabrication, assembly, installation of hardware, finishing and other work before shipment to project site. Disassemble components only as necessary for shipment and installation. Field stick framing is not acceptable.

C. Install hinges and all other hardware, with the exception of any surface-applied hardware such as door closer and locksets or push/pull hardware, at the manufacturer's plant.

1. Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware on Standard Steel Doors and Frames," published by Door and Hardware Institute.

D. Separate dissimilar metals with zinc chromate primer, bituminous paint, or other separator to prevent corrosion.

E. Maintain accurate relation of planes and angles, hairline fit contacting members.

F. Conceal fasteners where possible provide countersunk flat or oval heads for exposed screws and bolts.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and supports, with the Installer present, for compliance with requirements indicated, installation tolerances, and other conditions that affect installation of polyester faced doors. Correct unsatisfactory conditions before proceeding with the installation.

B. Examine door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
2. Reject doors with defects.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing FRP doors and aluminum framing systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint

C. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.

D. Install doors and frames plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.
2. Install frames with anchors appropriate for wall conditions to anchor framing to wall materials. A minimum of five anchors up to 7'- 4" on jamb members, and one additional anchor for each 12 inches over that height.

E. Construction Tolerances: Install doors and frames to comply with the following tolerances:

1. Variation from Plane: Do not exceed 1/16 inch in 12 feet of length or 1/8 inch in any total length.
2. Offset from Alignment: The maximum offset from true alignment between two identical members abutting end to end in line shall not exceed 1/16 inch.
3. Diagonal Measurements: The maximum difference in diagonal measurements shall not exceed 1/8 inch.
4. Offset at Corners: The maximum out-of-plane offset of framing at corners shall not exceed 1/32 inch.

F. Separate aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

1. Zinc or cadmium plate steel anchors and other unexposed fasteners after fabrication.
2. Paint dissimilar metals where drainage from them passes over aluminum.
3. Paint aluminum surfaces in contact with mortar, concrete or other masonry with alkali resistant coating.
4. Paint wood and similar absorptive material in contact with aluminum and exposed to the elements or otherwise subject to wetting, with two coats of aluminum house paint. Seal joints between the materials with sealant.

G. Drill and tap frames and doors and apply surface-mounted hardware items. Comply with hardware manufacturer's instructions and template requirements. Use concealed

fasteners wherever possible. Refer to Section 087100 for additional installation requirements.

H. Install perimeter sealant to comply with requirements of Division 07 Section "Joint Sealants," unless otherwise indicated.

3.3 ADJUSTING, CLEANING AND PROTECTION

A. Adjust operating hardware to function properly, for smooth operation without binding, and for weathertight closure.

B. Clean complete system, inside and out, promptly after installation, exercising care to avoid damage to coatings.

C. Institute protective measures required throughout remainder of construction period to ensure polyester faced doors will be without damage and deterioration, other than normal weathering, at time of acceptance.

END OF SECTION 082250

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall access doors and frames for interior locations.
2. Fire-rated wall access doors and frames for interior locations
3. Ceiling access doors and frames for interior locations.
4. Fire-rated ceiling access doors and frames for interior locations.

B. Locations and Quantities of Access Doors: Not all access doors are shown on the Drawings. It is the intent of this section that access doors be provided wherever access is required for operation and maintenance of concealed equipment, dampers, valves, controls or similar devices.

C. Cylinders for access doors are specified in Division 08 Section "Door Hardware."

D. Related Requirements:

1. Division 07 Section "Roof Accessories" for roof hatches.
2. Division 23 Section "Air Duct Accessories" for heating and air-conditioning duct access doors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, fire ratings, materials, individual components and profiles, and finishes.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Detail fabrication and installation of access doors and frames for each type of substrate.

C. Samples: For each door face material, at least 3 by 5 inches (75 by 125 mm) in size, in specified finish.

D. Product Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.3 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment, and indicate on schedule specified in "Submittals" Article

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics according to the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
2. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 PRODUCTS, GENERAL

A. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

2.3 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Babcock-Davis.
2. J. L. Industries, Inc.; Div. of Activar Construction Products Group.
3. Karp Associates, Inc.
4. Larsen's Manufacturing Company.
5. Milcor Inc.
6. Nystrom, Inc.

B. Flush Access Doors, with Exposed Trim, for CMU Surfaces: Units consisting of frame with exposed trim, door, hardware, and complying with the following requirements

1. Basis-of-Design Product: Karp Model DSC-214M, Universal Flush Access Door.
2. Assembly Description: Fabricate door to fit flush to frame. Provide flange integral with frame, 3/4 inch (19 mm) wide, overlapping surrounding finished surface.
3. Locations: Provide at non-rated concrete block walls.
4. Uncoated Steel Sheet for Door: Nominal 0.074 inch (1.9 mm), 14 gage.
   a. Finish: Factory prime.

5. Stainless-Steel Sheet for Door for Toilet Rooms, Shower Rooms, and Other Wet Areas: Nominal 0.074 inch (1.9 mm), 14 gage; No. 4 finish.
6. Frame Material: Nominal 0.060 inch (1.52 mm), 16 gage

7. Hinges: Concealed continuous piano hinge.
8. Latches: Self-latching key-operated bolt type, with interior release; for locking.

C. Trimless, Flush Access Doors for Gypsum Board Surfaces: Units consisting of frame, concealed edge trim, door, hardware, and complying with the following requirements:

1. Basis-of-Design Product: Karp KDW for drywall
2. Assembly Description: Fabricate door to fit flush to frame. Provide frame with gypsum board beads for concealed flange installation.
3. Locations: Provide at non-rated gypsum board walls and ceilings.
4. Uncoated Steel Sheet for Door: Nominal 0.074 inch (1.9 mm), 14 gage.
   a. Finish: Factory prime.

5. Stainless-Steel Sheet for Door for Toilet Rooms, Shower Rooms, and Other Wet Areas: Nominal 0.074 inch (1.9 mm), 14 gage; No. 4 finish.
6. Frame Material: Nominal 0.060 inch (1.52 mm), 16 gage.
7. Hinges: Concealed continuous piano hinge.
8. Latches: Self-latching key-operated bolt type, with interior release; for locking.

D. Recessed Doors for Acoustical Ceiling Tiles: Units consisting of frame with no exposed trim, recessed door to receive tile, hardware, and complying with the following requirements.

1. Basis-of-Design Product: Karp, Model DSC-210, Recessed Acoustical Ceiling Tile Access Doors.
2. Locations: Provide at non-rated acoustical ceilings tiles.
3. Uncoated Steel Sheet for Door: Nominal 0.060 inch (1.52 mm), 16 gage thick steel sheet; recessed 1-inch (25.4 mm).
   a. Finish: Factory prime.

4. Stainless-Steel Sheet for Door for Toilet Rooms, Shower Rooms, and Other Wet Areas: Nominal 0.060 inch (1.52 mm), 16 gage; No. 4 finish.
5. Frame Material: Nominal 0.074 inch (1.9 mm), 14 gage.
6. Hinges: Concealed, pivoting-rod type.
7. Latches: Self-latching key-operated bolt type, with interior release; for locking.

E. Insulated, Fire-Rated Access Doors for Drywall Walls and Ceilings: Units consisting of frame with gypsum board bead concealed edge trim, self-latching insulated door, and hardware, and complying with the following requirements:

1. Basis-of-Design Product: Karp, Model KRP-350FR, Insulated Fire Rated Access Door, with Drywall Bead, for Walls and Ceilings.
2. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release.
3. Locations: Provide at rated gypsum board walls and ceilings.
4. Fire-Resistance Ratings:
   a. Walls: 1-1/2 hours.
   b. Ceilings: 3 hours.

5. Uncoated Steel Sheet for Door: 20 ga., 0.0359-inch- (0.91-mm-) thick steel sheet, welded pan type, filled with 2-inch (50 mm) thick fire-rated mineral-fiber insulation.
   a. Finish: Factory prime.

6. Stainless-Steel Sheet for Door for Toilet Rooms, Shower Rooms, and Other Wet Areas: Same gage and style as steel door; with No. 4 finish.
7. Frame Material: 16 ga., 0.0598-inch- (1.52-mm-) thick steel sheet, 1-inch (25.4 mm) wide, surrounded by galvanized drywall bead.
8. Hinges: Concealed continuous piano hinge.
9. Hardware: Self-latching key-operated bolt type, with interior release; for locking.

F. Insulated, Fire-Rated Access Doors for CMU Walls: Units consisting of frame with exposed edge trim, self-latching insulated door, and hardware, and complying with the following requirements:

1. Basis-of-Design Product: Karp, Model KRP-150FR, Insulated Fire Rated Access Door, with Exposed Flange, for Walls and Ceilings.
2. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide flange integral with frame, 1 inch (25 mm) wide, overlapping surrounding finished surface. Provide self-latching door with automatic closer and interior latch release.
3. Locations: Provide at rated concrete block walls.
4. Fire-Resistance Ratings:
   a. Walls: 1-1/2 hours.

5. Uncoated Steel Sheet for Door: 20 ga., 0.0359-inch- (0.91-mm-) thick steel sheet, welded pan type, filled with 2-inch (50 mm) thick fire-rated mineral-fiber insulation.
   a. Finish: Factory prime.

6. Stainless-Steel Sheet for Door for Toilet Rooms, Shower Rooms, and Other Wet Areas: Same gage and style as steel door; with No. 4 finish.
7. Frame Material: 16 ga., 0.0598-inch- (1.52-mm-) thick steel sheet, 1-inch (25.4 mm) wide exposed trim.
8. Hinges: Concealed continuous piano hinge.
9. Hardware: Self-latching key-operated bolt type, with interior release; for locking.

G. Hardware:

1. Lock: Cylinder, keyed alike for project
2. Lock for Fire Rated Access Doors: Rim cylinder.
   a. Lock Preparation: Prepare door panel to accept cylinder specified in Section 087100 "Door Hardware."

2.4 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines or blend into finish.

E. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5.

F. Aluminum Plate and Sheet: ASTM B 209 (ASTM B 209M), Alloy 6061-T6.

G. Frame Anchors: Same type as door face.

H. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.5 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.

1. For concealed flanges with drywall bead, provide edge trim for gypsum board securely attached to perimeter of frames.
2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded metal lath and exposed casing bead welded to perimeter of frames.
3. Provide mounting holes in frames for attachment of units to metal or wood framing.
4. Provide mounting holes in frame for attachment of masonry anchors.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling.

E. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. Non-Rated Doors: For cylinder locks, furnish two keys per lock and key all locks alike.

2. Fire-Rated Doors: Cylinder and keys are specified in Section 087100 "Door Hardware."

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:

1. Factory Prime: Apply manufacturer's standard, VOC-free, electrostatic-applied powder coat finish immediately after surface preparation and pretreatment.

E. Stainless-Steel Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
   a. Run grain of directional finishes with long dimension of each piece.
   b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
   c. Directional Satin Finish: No. 4.

F. Aluminum Finishes:

1. Mill finish and factory primed, as specified.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 083450 - ELEVATOR DOOR SMOKE CONTAINMENT SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes smoke detector activated elevator door smoke containment curtain and control system designed to provide a tight- fitting, smoke- and draft- control assembly.

B. Related Sections include the following:

1. Division 14 Section “Electric Traction Elevators” for coordination with the door opening.
2. Division 26 Electrical Sections for 120v and control circuit power including conduit, boxes, conductors, wiring devices, and emergency power.

C. Products Supplied but Not Installed under this Section:

1. 10K ohm Resistor.

1.2 PERFORMANCE REQUIREMENTS

A. Air Leakage: Less than 3 cfm (0.001416 cm/s) per sf of door opening at 0.1 in. (25 Pa) water pressure differential at ambient temperature and 400 deg. F (204 deg. C) tested per IBC 714.2.3

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include door width and height, jamb width, jamb and head projection, curtain width, mounting height, housing width, and motor locations. Show and identify related work performed under other Sections of these Specifications.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Product Certificates: For each elevator door smoke containment system, signed by product manufacturer.

E. Qualification Data: For Manufacturer and Installer.

F. Product Test Reports: Based on evaluation of manufacturer’s tests performed by a qualified testing agency, for each elevator door smoke containment system.

G. Maintenance Data: For elevator door smoke containment systems to include in operation

and maintenance manuals.

H. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Standards: Manufacturer shall maintain a quality control program in accordance with ICBO-ES Acceptance Criteria AC 77.

B. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of systems for this Project.

C. Manufacturer's Qualifications: Minimum five (5) years experience in producing smoke containment systems of the type specified.

D. Source Limitations: Obtain all components of elevator door smoke containment system, including operators and controls, through one source from a single manufacturer.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.

F. Certifications:

1. Manufacturer's ICBO Evaluation Report.
2. Testing Laboratory Label.
3. UL Listing.

1.5 WARRANTY

A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of elevator door smoke containment systems that fail in materials or workmanship within specified warranty period.

1. Failure include, but are not limited to, the following:
   a. Structural failures including, but not limited to, excessive deflection.
   b. Faulty operation of operators and hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period: One (1) year from date of Substantial Completion.

1.6 OWNER'S INSTRUCTIONS

A. Maintenance and Testing:

1. Perform minimum semi-annual maintenance and testing on each smoke containment system as required by the manufacturer's warranty, code agency evaluation reports, and as required by local authority having jurisdiction.
2. Backup Battery: Test semi-annually and replace every three (3) years.

3. Retain permanent record of tests.

B. Required Replacement: Smoke containment screen requires replacement following exposure to temperatures exceeding 200 degrees F (93 degrees C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: The design for the elevator door smoke containment systems is based on Model 600 manufactured by Smoke Guard Corporation. Subject to compliance with requirements, provide the named product or an approved equivalent product.

2.2 COMPONENTS

A. Curtain:

1. Film: Minimum 1 mil (0.025 mm) thick transparent polyamide film reinforced with 100 denier nomex yarn at 0.25 in. (6.35 mm) each way.
2. Magnetic Strips: Flexible multi-pole strips attached to longitudinal edges of film with low modulus silicone adhesive.

B. Housing: 20-gage stainless steel container and door with concealed hinges, and latch.

C. Auxiliary Rails:

1. Material: 16-gage, ASTM A 240/240M, Type 430, ferritic stainless steel.
2. Size: 2-inch (50 mm) wide by depth required to project beyond face of elevator door frame, unless otherwise indicated.

D. Rewind Motor: Top mount, NFPA 70, 12v DC.

E. Release Mechanism: Comply with UL Standard No. 508 or 864.

F. Control Station: Metal box with battery backup, power disconnect with integral circuit breaker, step down power transformer (120v AC to 12v DC), and controller circuit board.

1. Emergency Power Supply: 12v DC battery with charger.

G. Wall Switch: Provide switch to rewind curtain into housing, system status indicators, keyed curtain deployment switch, and keyed to silence function.

1. Color: Selected by Architect from manufacturer’s full range of colors.

2.3 IDENTIFICATION

A. Label each smoke containment system with following information:

1. Manufacturer's name.
2. Maximum leakage rating at specified pressure and temperature conditions.
3. Label of quality control agency.

2.4 STAINLESS STEEL FINISHES

A. General: Remove or blend stretch lines and tool and die marks into finish.

1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Satin Finish: No. 4.

C. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, supports, and other conditions affecting performance of elevator door smoke containment systems.

1. Verify related work performed under other Sections is complete and in accordance with approved Shop Drawings.
2. Verify wall surfaces and elevator door frames are acceptable for installation of smoke containment system components.
3. If applicable, verify existing field painted elevator door frames to be used for curtain adherence have been repainted in accordance with smoke containment system manufacturer's instructions or they have the original factory paint.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Do not install damaged components.

B. Install smoke containment system components plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's installation instructions, Contract Drawings, and approved Shop Drawings..

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent inspecting agency to perform field tests and inspections and prepare test reports. Follow manufacturer's cycle test procedures.

1. Notify Owner's Representative, local Fire Marshal, alarm sub-contractor and elevator service company minimum one (1) week in advance of scheduled testing.
2. Complete maintenance service record.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and adjust operating hardware items just before final inspection. Leave work in complete and proper operating condition.

B. Remove and replace defective work, including defective or damaged curtains, housings, rails, bases, and frames that are warped, bowed, or otherwise unacceptable.

C. Clean all surfaces promptly after installation. Remove excess sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.

3.5 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
    a. Test elevator door smoke containment system closing mechanism activated by detector or alarm-connected fire-release system. Reset elevator door smoke containment system closing mechanism after successful test.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain elevator door smoke containment systems.

END OF SECTION 083450

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes aluminum windows of the performance class and grade indicated. Window types required include the following:

1. Double hung.
2. Casement
3. Fixed
4. Rescue windows

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 08 Section "Glazing."

1.2 DEFINITIONS

A. Rescue (emergency-access/egress) windows are side-hinged, single hung or sliding units that provide emergency exit.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.

B. Test Criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:

1. Wind Loads: Provide aluminum windows capable of withstanding wind-load design pressures indicated on the Drawings.
2. Test Procedures: Test window units according to ASTM E 283 for air infiltration, ASTM E 331 for water penetration, and ASTM E 330 for uniform load deflection and structural performance.

C. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Performance Class and Grade: As indicated in the window type in Part - 2 below.

D. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in AAMA/WDMA/CSA 101/I.S.2/A440 for air infiltration, water penetration, and structural performance for type, grade, and performance class of window units required.

1. Air-Infiltration Rate: Not more than quantity of cfm/ft. (cu. m/h per m) of operable sash joint for an inward test pressure of as indicated in lbf/sq. ft. (Pa) for the window type in Part - 2 below.
2. Water Penetration: No water penetration as defined in the test method at an inward test pressure indicated in the window type in Part - 2 below.
3. Uniform Load Deflection: No deflection in excess of 1/175 of any member's span during the imposed load, for a positive (inward) and negative (outward) test pressure indicated in lbf/sq. ft. (Pa) for the window type in Part - 2 below.
4. Structural Performance: No failure or permanent deflection in excess of 0.4 percent of any member's span after removing the imposed load, for a positive (inward) and negative (outward) test pressure indicated in lbf/sq. ft. (Pa) for the window type in Part - 2 below.
5. Condensation Resistance: Where window units are indicated to be "thermally improved," provide units tested for thermal performance according to AAMA 1503.1 showing a minimum condensation resistance factor (CRF) as indicated for the window type in Part - 2 below.
6. Thermal Transmittance: Provide window units with a U-value maximum as indicated on the Drawings (0.43 for operable windows and 0.34 for fixed windows) in Btu/sq. ft. x h x deg F, when tested according to AAMA 1503.1, for the window type in Part - 2 below.
7. Forced-Entry Resistance: Comply with performance grade 10 requirements when tested according to ASTM F 588.
8. Thermal Movements: Provide window units that allow thermal movement resulting from the following maximum change (range) in ambient temperature when engineering, fabricating, and installing aluminum windows to prevent buckling, opening of joints, and overstressing of components, connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime sky heat loss.
    a. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.4 SUBMITTALS

A. Product Data for each type of window required, including the following:

1. Construction details and fabrication methods.
2. Profiles and dimensions of individual components.
3. Data on hardware, accessories, and finishes.
4. Recommendations for maintaining and cleaning exterior surfaces.

B. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:

1. Layout and installation details, including anchors.

2. Elevations at 1/4 inch = 1 foot (1:50) scale and typical window unit elevations at 3/4 inch = 1 foot (1:20) scale.
3. Full-size section details of typical composite members, including reinforcement and stiffeners.
4. Location of weep holes.
5. Panning details.
6. Hardware, including operators.
7. Window cleaning provisions.
8. Glazing details.
9. Accessories.

C. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

D. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes.

E. Samples for Verification: 12-inch- (300-mm-) long sections of window members with applied finish. The Architect reserves the right to require additional samples that show fabrication techniques, workmanship, and design of hardware and accessories.

F. Test reports from a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated based on comprehensive testing of current window units within the last 5 years. Test results based on use of down-sized test units will not be accepted.

G. Qualification Data:

1. For Installer to demonstrate their capabilities and experience. Provide evidence of acceptability from manufacturer for installation.
2. For manufacturer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer acceptable to aluminum window manufacturer for installation of units required for this Project, who has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.

B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports, and calculations.

C. Source Limitations:

1. Obtain all aluminum windows for the entire project through one source and from a single manufacturer.

D. Product Options: The Drawings indicate sizes, profiles, dimensional requirements, and aesthetic effects of aluminum windows and are based on the specific window types and models indicated. Other aluminum window manufacturers whose products have equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. Refer to Division 01 Section regarding substitutions.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty signed by aluminum window manufacturer agreeing to repair or replace window components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
2. Faulty operation of sash and hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

C. Warranty Period: 2 years after date of Substantial Completion.

D. Warranty Period for Glass: 10 years after date of Substantial Completion.

E. Warranty Period for Metal Finishes: 20 years after date of Substantial Completion for painted finishes, 10 years for anodized finishes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: The drawings are based on windows by Kawneer, an Arconic Company. Provide specified products or equivalent products by one of the following:

1. Wausau
2. EFCO Corporation.

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, not less than 0.070 inch thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard, noncorrosive, pressed-in, splined grommet nuts.
2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate. Where exposed fasteners are unavoidable, provide tamper-resistant fasteners.

C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.

1. Provide anchor clips or strap anchors for fastening windows in place.

D. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action and for complete concealment when aluminum window is closed.

1. Weather-Stripping Material: Manufacturer's standard system and materials.

E. Sealant: For sealants required within fabricated window units, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating. Comply with Division 07 Section "Joint Sealants" of these Specifications for installation of sealants.

F. Wire-Fabric Insect Screen: 18-by-16 mesh of 0.011-inch-diameter, coated aluminum wire.

1. Color: Charcoal Grey.

G. Emergency Rescue Labels: 3 inch tall by 5 inch wide decal with bright yellow background, and black letters (Helvetica Medium type), with the following words: RESCUE WINDOW, centered on decal.

1. Provide all designated rescue windows with a permanent decal located on the sash (centered at bottom of lower sash or window) readable from both sides.

H. Insulating Materials: Provide minimal-expanding, single-component polyurethane foam sealant packaged in a spray can and intended to be used to fill smaller cracks and gaps as perimeter seal.

1. Basis of Design Product: Great Stuff Window and Door by DuPont, or equal

2.3 GLAZING

A. Provide insulating glass unit of material and thickness as specified in Section 088000.

1. Provide simulated divided lites consisting of exterior and interior tape applied muntins.

2.4 HARDWARE

A. General: Where not indicated, provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

2.5 ACCESSORIES

A. General: Provide manufacturer's standard accessories that comply with indicated standards.

B. Insect Screens: Provide insect screens for each operable exterior sash or ventilator as scheduled. Locate screens on inside or outside of window sash or ventilator, depending on window type. Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches.

1. Screen Frames: Fabricate frames of tubular-shaped, extruded- or formed-aluminum members of 0.050-inch- minimum wall thickness, with mitered or coped joints and concealed mechanical fasteners. Finish frames to match window units. Provide removable PVC spline-anchor concealing edge of screen frame.
2. Insect screens for rescue windows shall be side hinged type.

C. Sills: Finished to match window. Provide where indicated.

1. Extruded: .125 inch thick extruded aluminum.

D. Panning Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

2.6 FABRICATION, GENERAL

A. General: Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.

1. Provide units that are reglazable without dismantling sash or ventilator framing.

B. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance, thermal barrier, located between exterior materials and window members exposed on interior, in a manner that eliminates direct metal-to-metal contact. Thermal barriers shall be designed in accordance with AAMA TIR A8.

1. Double Hung and Fixed Windows: Frame and sash thermal barrier shall be polyamide with a minimum of 1" (frame) and ½" (sash) separation, installed continuously and mechanically bonded to the aluminum.
2. Casement: Structural thermal break made with glass-reinforced nylon strips, (closed cell PVC foam strips) installed by the window manufacturer in the frame and vent members.

C. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

D. Preglazed Fabrication: Preglaze window units at the factory. Comply with glass and glazing requirements of Division 08 Section "Glazing" of these Specifications and AAMA 101.

E. Window Fabrication, General:

1. Double Hung and Fixed: Provide minimum 0.070 inch thick extrusions for the main frame and sash member.
2. Casement: Provide minimum 0.080 inch thick extrusions for the main frame and 0.125 inch thick extrusions for the sash member.
3. Provide units incorporating pressure equalization to direct water to the exterior through baffled weep holes and/or compression seals installed in the aluminum extrusion.
4. Glazing Stops: Provide snap-on glazing stops, coordinated with glass selection and glazing system indicated. Finish to match window units..

F. Weatherstripping: Provide full perimeter weatherstripping for each operable sash complying with AAMA 701/702. Provide sliding-type weatherstripping where sash rails slide horizontally or vertically along unit frame. Provide compression-type weatherstripping at perimeter of each operating sash where sliding type is inappropriate.

1. Provide weatherstripping locked into extruded grooves in sash.

G. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.

H. Rescue Windows: Fabricate all window units designated as "Rescue" windows on drawings to comply with local and state codes for emergency egress windows. Provide a minimum clear opening of 6 square feet, with minimum 24" clearance for opening width and height. Rescue window maximum 54" to operating hardware.

I. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and

building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.

J. Sub Frames: Provide sub frames with anchors for window units as shown, of profile and dimensions indicated but not less than 0.093-inch (2.4-mm) thick extruded aluminum. Miter or cope corners, and join with concealed mechanical joint fasteners. Finish to match window units. Provide sub frames capable of withstanding design loads of window units.

2.7 DOUBLE HUNG WINDOWS

A. Window Performance Class and Grade: Comply with requirements of AAMA Performance Class and Grade AW-PG65-H. Window units shall successfully pass life-cycle test requirements specified in AAMA 910.

B. Performance Requirements:

	PERFORMANCE REQUIREMENTS						
Window Type(s)	Window Grade and Class	Air-Infil. Rate/ @ test pressure	Water Penetr.	Uniform Load Deflect.	Uniform Load Struct.	CRF frame	Thermal Trans.
Double hung	AW-PG65	.3 cfm/ ft. of sash @ 6.24	10 psf	65 psf	97.5 psf	71	.43

C. Hardware:
1. Sash Balances: A Class 5 adjustable spiral balance with stainless steel or other corrosion-resistant components. Two per sash.
2. Handle: Continuous, integral, bottom and top sash lift handle.
3. Sash Lock: White bronze sweep lock and keeper on meeting rails. One or two per sash as required by size. Brushed nickel finish.
   a. Provide spring-loaded, snap-type lock on bottom rail of lower sash.
   b. Provide spring-loaded, snap-type lock on top rail of upper sash.
4. Aluminum autolock at top sash lift handle.
5. Limit Device: Sash stop limit device; for bottom and top sash located at jamb; two per sash.

D. Frame Depth: 4-5/8"

E. Basis of Design Product: Kawneer OptiQ AA5450 Ultra Thermal Double Hung (Standard Face) Window or equal

2.8 CASEMENT (PROJECT-OUT) WINDOWS

A. Window Performance Class and Grade: Comply with requirements of AAMA Performance Class and Grade AW-PG 80-C. Window units shall successfully pass life-cycle test requirements specified in AAMA 910.

B. Hardware: Provide the following equipment and operating hardware:

1. Hinges: 4-bar stainless steel.
2. Lock: Cast white bronze cam locks.
3. Limit Devices: Limit to 4" opening
4. Operator: Omni Drive (5 lb.) operating force handle.

C. Performance Requirements:

	PERFORMANCE REQUIREMENTS						
Window Type(s)	Window Grade and Class	Air-Infil. Rate/ @ test pressure	Water Penetr.	Uniform Load Deflect.	Uniform Load Struct.	CRF frame	Thermal Trans.
Casement	AW-PG80	.1 cfm/ ft. of sash @ 6.24	15 psf	80 psf	120 psf	70	0.31

D. Frame Depth: 3-1/4"

E. Basis of Design Product: Kawneer AA4325 Ultra Thermal Window or equal.

2.9 FIXED WINDOWS

A. Window Performance Class and Grade: Comply with requirements of AAMA Performance Class and Grade AW-PG70-FW. Window units shall successfully pass life-cycle test requirements specified in AAMA 910.

B. Performance Requirements:

	PERFORMANCE REQUIREMENTS						
Window Type(s)	Window Grade and Class	Air-Infil. Rate/ @ test pressure	Water Penetr.	Uniform Load Deflect.	Uniform Load Struct.	CRF frame	Thermal Trans.
Fixed	AW-PG70	.1 cfm/ ft. of sash @ 6.24	10 psf	70 psf	105 psf	78	.34

C. Frame Depth: 4-5/8"

D. Basis of Design Product: Kawneer OptiQ AA5450 Ultra Thermal Fixed (Standard Face) Window or equal

2.10 FINISHES

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

C. Superior-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat(s).

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Basis of Design Product: Kawneer Permafluor or equal.
3. Color and Gloss: As selected by Architect.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect openings before installation. Verify that rough or masonry opening is correct and sill plate is level.

1. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal surfaces shall be dry; clean; free of grease, oil, dirt, rust and corrosion, and welding slag; without sharp edges or offsets at joints.

3.2 INSTALLATION

A. Comply with manufacturer's specifications and recommendations for installing window units, hardware, operators, and other components of the Work.

B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified under "Dissimilar Materials" Paragraph in appendix to AAMA 101.

C. Set sill members and other members in a bed of sealant or with joint fillers or gaskets, as shown on Shop Drawings, to provide weathertight construction. Refer to Division 07 Section "Joint Sealants" for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the Work.

1. Sealants, joint fillers, and gaskets to be installed after installation of window units are specified in another Division 07 Section.

D. Install spray foam insulation at voids, openings and cracks between window frames and adjacent construction.

3.3 CLEANING

A. Clean aluminum surfaces promptly after installing windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

B. Clean glass of preglazed units promptly after installing windows. Comply with requirements of Division 08 Section "Glazing" for cleaning and maintenance.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to aluminum window manufacturer, that ensure window units are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 085113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 01 Section "General Conditions".
2. Division 06 Section “Rough Carpentry”.
3. Division 06 Section “Finish Carpentry”.
4. Division 08 Section “Operations and Maintenance”.
5. Division 08 Section “Hollow Metal Doors and Frames”.
6. Division 08 Section “Flush Wood Doors”.
7. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
8. Division 26 Section "Electrical”

D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” heavy weight.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

a. Hager Companies (HA) - BB Series, 5-knuckle.
b. Ives (IV) - 5BB Series, 5-knuckle.
c. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum

overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

    a. Hager Companies (HA).
    b. Ives (IV).
    c. Pemko (PE).

2.4 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

    1. Manufacturers:

        a. Pemko (PE) - EL-CEPT Series.
        b. Securitron (SU) - EL-CEPT Series.
        c. Von Duprin (VD) - EPT-10 Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

    1. Provide one each of the following tools as part of the base bid contract:

        a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
        b. McKinney (MK) - Connector Hand Tool: QC-R003.

    2. Manufacturers:

        a. Hager Companies (HA) - Quick Connect.
        b. McKinney (MK) - QC-C Series.
        c. Von Duprin (VD) - Connect.

2.5 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Door Controls International (DC).
    b. Rockwood (RO).
    c. Trimco (TC).

B. Coordinators: ANSI/BHMA A156.3 door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:

    a. Door Controls International (DC).
    b. Rockwood (RO).
    c. Trimco (TC).

C. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Hiawatha, Inc. (HI).
    b. Rockwood (RO).
    c. Trimco (TC).

2.6 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

1. Manufacturers:

    a. Corbin Russwin Hardware (RU).
    b. Sargent Manufacturing (SA).

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Standard.

C. Small Format Interchangeable Cores: Provide small format interchangeable cores (SFIC) as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer’s United States patents.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:

    a. Medeco (MC) - X4.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

G. Construction Keying: Provide construction master keyed cylinders.

H. Construction Keying: Provide temporary keyed construction cores.

I. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.7 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

2.8 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Heavy duty 12-gauge wrought steel case.
b. Stainless steel 3/4" one-piece anti-friction reversible latchbolt with a one-piece hardened stainless steel 1” projection deadbolt.
c. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
d. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
e. Meets UL Certification Directory ZHLL.R21744 for products used in windstorm rated assemblies.
f. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 14.5 million cycles or greater.
g. Status indicators inside, outside, or on both sides of doors as specified; available with wording for “locked/unlocked”, “vacant/occupied” or custom wording options. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status.
h. Ten-year limited warranty for mechanical functions.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.

b. Sargent Manufacturing (SA) - 8200 Series.

2.9 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Meets ANSI/BHMA A156.41 for single motion egress.
b. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
c. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
d. Exceeds ANSI/BHMA A156.2 requirements by 2.6 times for 3,100 in-lb. abusive locked lever torque with no entry while maintaining egress.
e. Exceeds ANSI/BHMA A156.2 requirements by 8 times for 1,600 lbs. offset lever pull with no entry for protection against attacks.
f. Exceeds ANSI/BHMA A156.3 requirements by 2 times for latch retraction with 100 lb. preload while maintaining operation in warped doors.
g. Exceeds ANSI/BHMA A156.3 requirements by 20 times for no access with minimum 100 vertical impacts for protection against vandalism attempts.
h. Independent return springs allow lock to exceed ANSI/BHMA A156.2 Grade 1 cycle requirements without lever sag.
i. Status indicators inside, outside, or on both sides of doors as specified with high visibility red/green or red/white icons to display locked or unlocked state in the rose.
j. Provide ¾” latch throw at double doors.
k. Ten-year limited warranty for mechanical functions.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - CLX3300 Series.
b. Sargent Manufacturing (SA) - 10X Line.

2.10 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Short-lipped strikes: For locks at double doors.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.11 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes conforming to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:

    a. Folger Adam (FO) - 700 Series.
    b. HES (HS) - 1500/1600 Series.

B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.

1. Manufacturers:

    a. Folger Adam (FO) - 310-4 Series.
    b. HES (HS) - 9400/9500/9600/9700/9800 Series.

C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.12 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.

4. Except on fire rated doors, provide exit devices with keyed cylinder dogging device to hold the pushbar and latch in a retracted position.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide exit devices with functions and features as follows:

    a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
    b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
    c. No catch points: addition of applied deflectors or other added components are not allowed.
    d. No visible plastic.
    e. Heavy duty end caps with flush and overlapping options made of stainless steel, brass, or bronze with architectural finishes.
    f. Constructed of all stainless steel.
    g. Stainless steel pullman type latch with deadlock feature.
    h. Narrow or wide style exterior trim as specified in the hardware sets.
    i. Ten-year limited warranty for mechanical features.

2. Manufacturers:

    a. Corbin Russwin Hardware (RU) - PED4000 / PED5000 Series.
    b. Sargent Manufacturing (SA) - PE80 Series.
    c. Von Duprin (VD) - 35A/98 XP Series.

2.13 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Cycle Testing: Provide closers which have surpassed 15 million cycles.
4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC8000 Series.
b. Norton Rixson (NO) - 7500 Series.
c. Sargent Manufacturing (SA) - 351 Series.

2.14 SURFACE MOUNTED CLOSER HOLDERS

A. Multi-Point Closer Holders: ANSI/BHMA A156.15, Grade 1 multi-point closer holders designed to hold open fire or smoke rated doors until interruption of signal from fire alarm, smoke detector or remote release switch. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide closer holders with functions and features as follows:

a. UL-cUL listed and UL10C compliant for positive pressure up to 3-hours.
b. Door closer body that meets ANSI/BHMA A156.4 Grade 1 requirements with adjustable spring power, closing and latching speeds and backcheck.

c. Selective hold open at any degree of opening beyond a pre-set hold open point, up to 175º, with a maximum allowable door opening of 180º.
d. Multiple operating voltages: 24VDC or 120VAC.
e. Push or pull side or double egress mounting.
f. Fail-safe operation: solenoid to de-energize in the event of a power failure.
g. Unit must be capable of being manually pulled out of hold open without damaging the unit. Otherwise a separate release switch and wiring will be required.
h. Two-year limited warranty.

2. Manufacturers:

a. Norton Rixson (NO) - 7200 Series.
b. Sargent Manufacturing (SA) - 2300 Series.

B. Electromagnetic Door Holders: ANSI A156.15, Grade 1 electromagnetic door holder/releases with a minimum 25 to 40 pounds holding power and fail-safe operation; power failure releases door to close.

1. Manufacturers:

a. Norton Rixson (NO) - 900 Series.
b. Sargent Manufacturing (SA) - 1560 Series.

2.15 ELECTROMECHANICAL DOOR OPERATORS

A. Electromechanical Door Operators (High Traffic): Provide ANSI/BHMA A156.19 Certified Products Directory (CPD) listed low energy operators that are UL325/991 and UL10C certified and comply with requirements for the Americans with Disabilities Act (ADA). Operators shall accommodate openings up to 250 pounds and 48” wide. Provide accessories such as custom templates, special mounting brackets, spacers and drop plates as needed for proper installation. Operators shall accommodate openings up to 200 pounds and 48” wide. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide operators with features as follows:

a. Non-handed with push and pull side mounting.
b. Activation by push button, hands-free or radio frequency devices.
c. Adjustable opening force and closing power.
d. Two-year limited warranty.
e. Wi-Fi interface where the operator is a secure, password protected WiFi hot spot with no connection to building’s IT required.
   1) Simple setup with no app required.
   2) View status and make adjustments without removing the cover.
   3) Built-in logic to support single use restroom applications with no external relay boards, logic modules, position switches required.
f. Mounting backplate to simplify and speed up installation.
g. Integration with access control systems.

2. Operators shall have the following functionality:

   a. Adjustable Hold Open: Amount of time a door will stay in the full open position after an activation.
   b. Blow Open for Smoke Ventilation: Door opens when signal is received from alarm system allowing air or smoke to flow through opening. Door will stay open until signal from alarm system is stopped.
   c. Emergency Interface Relay: Door closes and ignores any activation input until signal is discontinued.
   d. Infinite Hold Open: Door will hold open at set position until power is turned off.
   e. Latch Assist: At closed position, after an activation, the door is pulled in. After the door has closed, the door is pulled in to assist with latch release/engagement.
   f. Obstruction Detection: Door closes if it hits an obstruction while opening; door will reverse to open position if it hits an obstruction while closing. Door will stop once it hits an obstruction and will rest against the obstruction until removed.
   g. Open Delay: Delays operator opening for locking hardware.
   h. Outside Wall Switch Disable: When contact is closed, outside wall switch is disabled.
   i. Power Assist: Senses the door is being opened manually and applies small amount of power to assist the user in opening the door with force less than 5 lbs. The door opens only as far as it is moved manually, then closes once released.
   j. Power Close: Additional force to assist door closing between 7° and 2°.
   k. Presence Detector Input: Input for external sensor to detect presence at door open or close position only.
   l. Push & Go: As the door is manually opened, the operator "senses" movement and opens door to the full-open position.
   m. Selector Mode Switch: Off disables the signal inputs unless Blow Open is activated, on activates the signal inputs, hold open activates the unit (unless Blow Closed is activated) to the hold open position.
   n. Vestibule Delay: When the wall switch is pressed, first door in vestibule will open. Second door will open once vestibule door delay has expired. Delay is adjustable.
   o. Executive Mode Feature: When the door receives an activation signal it opens and remains open until either a second signal is received, or the door is manually moved in closing direction.

3. Manufacturers:

   a. ASSA ABLOY Entrance Systems (BE) - SW200 Series.
   b. Horton Automatics (HO) - S4100LE Series.
   c. Norton Rixson (NO) - 6300 Series.

2.16 ARCHITECTURAL TRIM AND ACCESSORIES

A. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1” less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide protective trim with functions and features as follows:

a. Meets ADA requirements for smooth bottom door surfaces.
b. UL Classified options for use on fire-rated doors up to 3 hours.
c. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.
d. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.
e. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.
f. Fasteners included; adhesive-backed options available for select models.
g. Ten-year limited warranty.

2. Manufacturers:

a. Hiawatha, Inc. (HI).
b. Rockwood (RO).
c. Trimco (TC).

2.17 DOOR STOPS AND HOLDERS

A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

a. Hiawatha, Inc. (HI).
b. Rockwood (RO).
c. Trimco (TC).

B. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

a. Norton Rixson (NO).
b. Rockwood (RO).
c. Sargent Manufacturing (SA).

2.18 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

2.19 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Alarm Controls (AK) - CP1-1026 Series.
b. Sargent Manufacturing (SA) - 3280 Series.
c. Securitron (SU) - DPS Series.

B. Intelligent Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Power supplies shall meet all functions and features as specified herein.

a. UL listed dual voltage 12 or 24 VDC field selectable continuous output.
b. Dedicated fast charger to prolong battery life with low battery cutoff to protect batteries from deep discharge.

c. Enhanced surge immunity for input/output protection
d. Separate, dedicated battery charging circuit to keep locks cooler.
e. Dual-color LED visual notification to prevent applying incorrect voltages to the power supply.
f. Instant auto-switch to battery on AC loss.
g. Expandable up to 16 outputs in the standard enclosure
h. Integrated fire alarm interface to allow main output shutdown or disconnect on a per output basis when using an R8 output module.
i. Network ready and remotely manage locks and connected devices when using an M8 managed output module on network models.
j. Lifetime replacement, no-fault, no questions asked warranty.

2. Manufacturers:

a. Life Safety Power (LP).
b. Securitron (SU) - AQL Series.

2.20 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.21 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Paint prime coated mullions to match frames.

C. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

D. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

E. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

F. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

G. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved

submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

5. Coordinate with the Hardware Set Description to ensure proper set assignment.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. RU - Corbin Russwin
6. DE - Detex Corporation
7. MC - Medeco
8. HS - HES
9. NO - Norton Rixson
10. OT - Other

Hardware Sets

Set: 1.0
Doors: 000A, 101F
Description: Exterior FRP Pair - Card Access; Auto

2	Continuous Hinge	CFM_SLF-HD1		PE
1	Key Removable Mullion	CR910(B)KM M96 M95 M57		RU
1	Rim Exit Device, Exit Only	PED5201 M52 EO CT6SD	630	RU
1	Rim Exit Device, Nightlatch	PED5257 M52 K157ET CT6SD	630	RU
4	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mullion Cylinder	CRMCK1 SFIC	626	RU
1	Electric Strike	9600-LBSM	630	HS
1	SMART Pac Bridge Rectifier	2005M3 x 2004M		HS
2	Pull	P12	630	RU
2	Concealed Overhead Stop	1-X36 or 6-X36	630	NO
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Automatic Opener	6331; 6332 (to suit conditions)	689	NO
1	Mullion Gasketing	5110BL		PE
1	Gasketing	By Aluminum Door / Frame Supplier		
2	Sweep	3452CNB		PE
1	Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
1	ElectroLynx Harness (frame)	QC-CxxxxP (device to J-box)		MK
2	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU
1	Power Supply	AQL Series (coord/ with security)		SU
1	REX Device	By Security		
1	Card Reader	Card Reader by Others		
2	Door Switch	671		NO
1	Wiring Diagram	Elevation & Point-to-Point		

Notes: Provide extra long wiring harness for mullion.

Door 101F has been moved to this set and will require either a card reader or key switch to enable the outside actuator.

Operation: Door is normally closed and locked/latched. Valid card at reader unlatches strike for momentary access, then enables outside actuator. Inside actuator unlatches, then auto opens door. Monitoring by door position switch. During a loss of power the door will default to secure. Free egress at all times. Lock status will not change when the fire detection/suppression systems are activated. Approaching door on egress side will activate request-to-exit switch for appropriate monitor by EAC systems. Outside key override.

Set: 2.0
Doors: 013C, 013D, 100E, 101E
Description: Exterior FRP Single - Card Access; Auto

1	Continuous Hinge	CFM_SLF-HD1		PE
1	Rim Exit Device, Nightlatch	PED5257 M52 K157ET CT6SD	630	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Electric Strike	9600-LBSM	630	HS
1	SMART Pac Bridge Rectifier	2005M3 x 2004M		HS
1	Pull	P12	630	RU
1	Concealed Overhead Stop	1-X36 or 6-X36	630	NO
1	Automatic Opener	6331; 6332 (to suit conditions)	689	NO
1	Gasketing	By Aluminum Door / Frame Supplier		
1	Sweep	3452CNB		PE
1	Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
1	ElectroLynx Harness (frame)	QC-CxxxxP (device to J-box)		MK
1	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU
1	Power Supply	AQL Series (coord/ with security)		SU
1	REX Device	By Security		
1	Card Reader	Card Reader by Others		
2	Door Switch	671		NO
1	Wiring Diagram	Elevation & Point-to-Point		

Notes: Doors 100E and 101E have been moved to this set and will require either a card reader or key switch to enable the outside actuator.

Operation: Door is normally closed and locked/latched. Valid card at reader unlatches strike for momentary access, then enables outside actuator. Inside actuator unlatches, then auto opens door. Monitoring by door position switch. During a loss of power the door will default to secure. Free egress at all times. Lock status will not change when the fire detection/suppression systems are activated. Approaching door on egress side will activate request-to-exit switch for appropriate monitor by EAC systems. Outside key override.

Set: 3.0
Doors: 113D
Description: Exterior FRP Pair

2	Continuous Hinge	CFM_SLF-HD1		PE
1	Key Removable Mullion	CR910(B)KM M96 M95 M57		RU

1	Rim Exit Device, Exit Only	PED5201 M52 EO CT6SD	630	RU
1	Rim Exit Device, Nightlatch	PED5257 M52 K157ET CT6SD	630	RU
4	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mullion Cylinder	CRMCK1 SFIC	626	RU
2	Pull	P12	630	RU
2	Concealed Overhead Stop	1-X36 or 6-X36	630	NO
2	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Mullion Gasketing	5110BL		PE
1	Gasketing	By Aluminum Door / Frame Supplier		
2	Sweep	3452CNB		PE
1	Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
2	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU

Set: 3.1
Doors: SC2
Description: Exterior FRP Pair - Card Access

2	Continuous Hinge	CFM_SLF-HD1		PE
1	Key Removable Mullion	CR910(B)KM M96 M95 M57		RU
1	Rim Exit Device, Exit Only	PED5201 M52 EO CT6SD	630	RU
1	Rim Exit Device, Nightlatch	PED5257 M52 K157ET CT6SD	630	RU
4	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mullion Cylinder	CRMCK1 SFIC	626	RU
1	Electric Strike	9600-LBSM	630	HS
1	SMART Pac Bridge Rectifier	2005M3 x 2004M		HS
2	Pull	P12	630	RU
2	Concealed Overhead Stop	1-X36 or 6-X36	630	NO
2	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Mullion Gasketing	5110BL		PE
1	Gasketing	By Aluminum Door / Frame Supplier		
2	Sweep	3452CNB		PE
1	Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
1	ElectroLynx Harness (frame)	QC-CxxxxP (device to J-box)		MK
2	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU
1	Power Supply	AQL Series (coord/ with security)		SU
1	REX Device	By Security		
1	Card Reader	Card Reader by Others		
1	Wiring Diagram	Elevation & Point-to-Point		

Set: 4.0
Doors: 019C, 022B
Description: Exterior FRP Pair Kitchen; Boiler - Card Access

1	Continuous Hinge	CFM_SLF-HD1		PE
1	Continuous Hinge	CFM_SLF-HD1 PT		PE
1	Electric Power Transfer	EL-CEPT	630	SU
1	Combination Flush Bolt Set	2845	US32D	RO
1	Dust Proof Strike	570	US26D	RO
1	Fail Secure Lock, RX	ML20906-SEC NSA M92 CT6SD	630	RU

1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Concealed Overhead Stop	1-X36 or 6-X36	630	NO
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Astragal	355CPK		PE
1	Gasketing	By Aluminum Door / Frame Supplier		
1	Rain Guard	346C x (Width of Frame Head)		PE
2	Sweep	3452CNB		PE
1	Threshold (coord w/ details)	273x292AFGPK FHSL14SS-2		PE
1	ElectroLynx Harness (frame)	QC-CxxxxP (device to J-box)		MK
1	ElectroLynx Harness (door)	QC-Cxxx (Hinge to Device)		MK
2	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU
1	Power Supply	AQL Series (coord/ with security)		SU
1	Card Reader	Card Reader by Others		
1	Wiring Diagram	Elevation & Point-to-Point		

Notes: Omit rain guard at inset conditions.

Operation: Door is normally closed and locked. Valid card at reader unlocks outside lever for momentary access. Monitoring by door position switch. During a loss of power the door will default to secure. Free egress at all times. Lock status will not change when the fire detection/suppression systems are activated. Rotating inside lever will activate request to exit switch for appropriate monitor by EAC systems. Outside key override.

Set: 5.0
Doors: 023
Description: Electric Single

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Rim Exit Device, Storeroom	PED5257 A N957PT CT6SD	630	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	CPS7500	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Gasketing	S88BL (Head & Jambs)		PE
1	Threshold (match jamb depth)	172A FHSL14SS		PE

Set: 6.0
Doors: 023A
Description: Electric Double

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Key Removable Mullion	CR910(B)KM M96 M95 M57		RU
1	Rim Exit Device, Storeroom	PED5257 A N957PT CT6SD	630	RU
1	Rim Exit Device, Exit Only	PED5201 A EO	630	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mullion Cylinder	CRMCK1 SFIC	626	RU
2	Surface Closer	CPS7500	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
1	Meeting Edge Seal	S771BL		PE

1	Mullion Gasketing	5110BL		PE
1	Gasketing	S88BL (Head & Jambs)		PE
1	Threshold (match jamb depth)	172A FHSL14SS		PE

Set: 7.0
Doors: 200E
Description: Corridor Double Egress Pair

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
2	Surface Vert Rod Exit, Passage	PED5410 A N9M10PT M55	630	RU
2	Surface Closer	7500 Series (to suit conditions)	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Meeting Edge Seal	S771BL		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 7.1
Doors: 101D, 201F
Description: Corridor Double Egress Pair - Hold Open

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
2	Surface Vert Rod Exit, Exit Only	PED5401 A EO M55	630	RU
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Electro-Mechanical Closer/Holder	7220MPSO Series	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
2	Electromagnetic Holder	998M (or to suit conditions)	689	NO
1	Meeting Edge Seal	S771BL		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Notes:
Operational Description: Doors are normally held open via the magnetic hold opens. Upon activation of the fire alarm or loss of power the doors will close and latch.

Provide Norton 7200MPSO electro-mechanical closer/holders where a wall-mounted hold open cannot be mounted.
Coordinate with GC and Electrical Contractor.

Set: 8.0
Doors: 110, 113, 113C, 218
Description: Gym/Audit; Balcony; Library Double

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Key Removable Mullion	CR910(B)KM M96 M95 M57		RU
2	Rim Exit Device, Intruder	PED5242 A N942PT CT6SD	630	RU
4	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mullion Cylinder	CRMCK1 SFIC	626	RU
2	Surface Closer	7500 Series (to suit conditions)	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO

2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
2	Astragal	303APK		PE
1	Mullion Gasketing	5110BL		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Notes: Mount closer on push-side of door 113C.

Set: 9.0
Doors: 013, 013A
Description: Cafeteria Double - Hold Open

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
2	Surface Vert Rod Exit, Classroom	PED5455 A N9M55PT M55	630	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
2	Electro-Mechanical Closer/Holder	7220MPSO Series	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
2	Astragal	303APK		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Notes: Mount closers on push side.

Interface with building fire alarm system to release door(s) from hold open.

Provide Norton 7200MPSO electro-mechanical closer/holders where a wall-mounted hold open cannot be mounted.
Coordinate with GC and Electrical Contractor.

Set: 10.0
Doors: 110A, 110B
Description: Library Single

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Rim Exit Device, Intruder	PED5242 A N942PT CT6SD	630	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 11.0
Doors: 001A, 018a
Description: Vestibule; Corridor Pair - Passage

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
2	Surface Vert Rod Exit, Passage	PED5410 A N9M10PT M55	630	RU
2	Surface Closer	7500 Series (to suit conditions)	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO

2 Astragal	303APK		PE
1 Gasketing	S88BL (Head & Jambs)		PE

Set: 12.0
Doors: SA2, SA3, SA4, SA5, SB2, SB3, SB4, SB5, SB6
Description: Stair; Corridor Double - Hold Open

6 Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
2 Surface Vert Rod Exit, Passage	PED5410 A N9M10PT M55	630	RU
2 Surface Closer	7500 Series (to suit conditions)	689	NO
2 Kick Plate	K1050 10" high CSK	US32D	RO
2 Door Stop	404; 441CU; overhead as req'd	US26D	RO
2 Electromagnetic Holder	998M (or to suit conditions)	689	NO
2 Astragal	18041CNB		PE
1 Gasketing	S88BL (Head & Jambs)		PE

Notes:
Operational Description: Doors are normally held open via the magnetic hold opens. Upon activation of the fire alarm or loss of power the doors will close and latch.

Provide Norton 7200MPSO electro-mechanical closer/holders where a wall-mounted hold open cannot be mounted.
Coordinate with GC and Electrical Contractor.

Set: 13.0
Doors: 100B, 101A, SA1, SB1, SC1, SC3, SC4
Description: Stair; Corridor Single - Hold Open

3 Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1 Rim Exit Device, Passage	PED5210 A N910PT	630	RU
1 Surface Closer	7500 Series (to suit conditions)	689	NO
1 Kick Plate	K1050 10" high CSK	US32D	RO
1 Door Stop	404; 441CU; overhead as req'd	US26D	RO
1 Electromagnetic Holder	998M (or to suit conditions)	689	NO
1 Gasketing	S88BL (Head & Jambs)		PE

Notes:
Operational Description: Doors are normally held open via the magnetic hold opens. Upon activation of the fire alarm or loss of power the doors will close and latch.

Provide Norton 7200MPSO electro-mechanical closer/holders where a wall-mounted hold open cannot be mounted.
Coordinate with GC and Electrical Contractor.

Set: 14.0
Doors: 113A
Description: Gym/Audit Storage Pair

6 Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK

1	Dust Proof Strike	570	US26D	RO
2	Manual Flush Bolt	555 / 557 (As Required)	US26D	RO
1	Classroom Lock	CLX3355 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Astragal	357SP		PE
2	Silencer	608		RO

Set: 15.0
Doors: 022A, 024, 025
Description: Storage; Maintenance Double

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Combination Flush Bolt Set	2845	US32D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	CLX3357 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
2	Mounting Bracket	2601D (As Required for PA Closer Mounting)	US28	RO
1	Coordinator	2600 (Length as Required)	US28	RO
2	Surface Closer	7500 Series (to suit conditions)	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Meeting Edge Seal	S771BL		PE
1	Astragal	357SP		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 16.0
Doors: 004A, 014, 019B, 113B, 208A, 212A
Description: Gym/Audit; Classroom Storage

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Classroom Lock	CLX3355 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
3	Silencer	608		RO

Set: 17.0
Doors: 003, 005, 007, 008, 008A, 009, 010, 015, 020, 114, 115, 116, 200A, 200D, 207, 209, 215, 219, 220, 221, 223
Description: Utility; Storage; Custodian; Staff Room

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Storeroom Lock	CLX3357 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO

1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 18.0
Doors: 019A, 216A
Description: Office

3	Hinge, Full Mortise	TA2714-MCK	US26D	MK
1	Entrance Lock	CLX3351 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
3	Silencer	608		RO

Set: 19.0
Doors: 100C, 106, 112, 213, 216, 217
Description: Office; Conf - Rated

3	Hinge, Full Mortise	TA2714-MCK	US26D	MK
1	Entrance Lock	CLX3351 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 20.0
Doors: 211A, 217A
Description: Classroom Storage Double

6	Hinge, Full Mortise	TA2714-MCK	US26D	MK
1	Dust Proof Strike	570	US26D	RO
2	Manual Flush Bolt	555 / 557 (As Required)	US26D	RO
1	Classroom Lock	CLX3355 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
2	Surface Overhead Stop	10-X36	630	NO
2	Silencer	608		RO

Set: 21.0
Doors: 006B, 201B, 201C, 202B
Description: Classroom Storage Single

3	Hinge, Full Mortise	TA2714-MCK	US26D	MK
1	Classroom Lock	CLX3355 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
3	Silencer	608		RO

Notes: Provide S88BL head and jamb seals at rated doors.

Set: 22.0
Description: Not Used - Serving Double - Hold Open

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Combination Flush Bolt Set	2845	US32D	RO
1	Dust Proof Strike	570	US26D	RO
1	Classroom Intruder Lock	CLX3352 NZD M08	626	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
2	Mounting Bracket	2601D (As Required for PA Closer Mounting)	US28	RO
1	Coordinator	2600 (Length as Required)	US28	RO
2	Electro-Mechanical Closer/Holder	7220MPSO Series	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Astragal	357SP		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Notes: Interface with building fire alarm system to release door(s) from hold open.

Set: 23.0
Doors: 013B, 018b
Description: Serving Single, Egress - Hold Open

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Rim Exit Device, Intruder	PED5242 A N942PT CT6SD	630	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Electro-Mechanical Closer/Holder	7220MPSO Series	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Notes: Interface with building fire alarm system to release door(s) from hold open.
Mount closer on push side.

Set: 24.0
Doors: 000B, 000C, 100F, 100G, 200B, 200C
Description: Elev Vestibule

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Classroom Lock	CLX3355 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	2800ST Series	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 25.0
Doors: 002, 004, 006, 012, 019D, 103, 105, 107A, 107B, 107C, 117, 117A, 118, 118A, 119, 119A, 120, 120A, 201, 202, 205, 205A, 208, 210, 210A, 211, 212, 214, 214A, 222, 222A, 225, 225A, 226, 226A, 229, 229A
Description: Classroom; Cubbies; Kitchen

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Classroom Intruder Lock	CLX3352 NZD M08	626	RU
2	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Surface Closer	2800ST Series	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 25.1
Doors: 102
Description: Classroom Double

6	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Combination Flush Bolt Set	2845	US32D	RO
1	Dust Proof Strike	570	US26D	RO
1	Classroom Intruder Lock	CLX3352 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Mounting Bracket	2601D (As Required for PA Closer Mounting)	US28	RO
1	Coordinator	2600 (Length as Required)	US28	RO
2	Surface Closer	2800ST Series	689	NO
2	Kick Plate	K1050 10" high CSK	US32D	RO
2	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Meeting Edge Seal	S771BL		PE
1	Astragal	357SP		PE
1	Gasketing	S88BL (Head & Jambs)		PE

Notes: Panic hardware may be required based on square footage unless a deduction can be made for oversized furniture. Architect to review.

Set: 26.0
Doors: 007A, 111, 224
Description: Staff Toilet

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Hotel Lock (staff toilet)	ML2029 NSA V21 CT6SD	626	RU
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Mop Plate	K1050 4" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
3	Silencer	608		RO
1	Coat Hook	RM811	US26D	RO

Set: 27.0
Doors: 006A, 016, 017, 103A, 117B, 118B, 119B, 120B, 201A, 202A, 227, 228
Description: Toilet

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Privacy Lock w/ Indicators	CLX3320 NVSL V33	626	RU
1	Surface Closer	2800ST Series	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
3	Silencer	608		RO

Notes: Arch to advise if passage sets needed for kindergarten toilets.

Set: 28.0
Doors: 011, 021, 109, 206
Description: Toilet - Single Use

3	Hinge, Full Mortise	TA2714-MCK	US26D	MK
1	Privacy Lock w/ Indicators	CLX3320 NVSL V33	626	RU
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Mop Plate	K1050 4" high CSK	US32D	RO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE
1	Coat Hook	RM811	US26D	RO

Set: 29.0
Doors: 104, 203
Description: Restroom (multi-use) - Rated

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Passage Latch	CLX3310 NZD	626	RU
1	Surface Closer	2800ST Series	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO
1	Gasketing	S88BL (Head & Jambs)		PE

Set: 30.0
Doors: 026
Description: Data Room - Card Access

3	Hinge, Full Mortise, Hvy Wt	T4A3786-MCK	US26D	MK
1	Storeroom Lock	CLX3357 NZD M08	626	RU
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Electric Strike	1500C-LMS	630	HS
1	SMART Pac Bridge Rectifier	2005M3 x 2004M		HS
1	Surface Closer	7500 Series (to suit conditions)	689	NO
1	Kick Plate	K1050 10" high CSK	US32D	RO
1	Door Stop	404; 441CU; overhead as req'd	US26D	RO

1	Gasketing	S88BL (Head & Jambs)		PE
1	ElectroLynx Harness (frame)	QC-CxxxxP (device to J-box)		MK
1	Door Contact (recessed)	CP1-1026W DPDT UL	Wht	SU
1	Power Supply	AQL Series (coord/ with security)		SU
1	REX Device	By Security		
1	Card Reader	Card Reader by Others		
1	Wiring Diagram	Elevation & Point-to-Point		

Notes:
Operation: Door is normally closed and locked/latched. Valid card at reader unlatches strike for momentary access. Monitoring by door position switch. During a loss of power the door will default to secure. Free egress at all times. Lock status will not change when the fire detection/suppression systems are activated. Approaching door on egress side will activate request-to-exit switch for appropriate monitor by EAC systems. Outside key override.

Set: 31.0
Doors: Gates
Description: Gates

1	Exit Device, Electrified	10xW 09D ER EX W LD 99	630	DE
1	Kit	GTPLKIT (or to suit conditions)		DE
1	Spacer	08GS		DE
1	Small Format Inter Core	X4 (keyed as directed)	26	MC
1	Cylinder (SFIC)	To suit device	626	RU
1	Power Supply	AQL Series (coord/ with security)		SU
1	Conduit	FC3W		DE
1	Remainder of Hardware	Supplied with assembly		OT

Notes: Coordinate access-control devices and power supply with security (typ).

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Windows.
2. Doors.
3. Interior borrowed lites, sidelights and transoms.

1.2 DEFINITIONS

A. Manufacturer: A firm that produces primary glass or fabricated glass as defined in referenced glazing publications.

B. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

C. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

D. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

E. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Where glass thicknesses are indicated these are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Where glass thickness is not indicated design glass thickness and types of glass required by analyzing Project loads and in-service conditions. Provide glass lites for various size openings in nominal thicknesses indicated, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
   a. Wind Loads: Provide glazing capable of resisting wind positive and negative pressures calculated according to the New York Building Code Section 1609.6 and the following criteria:
      1) Basic Wind Speed (3 second gust) = as indicated on Structural Drawings
      2) Wind Load Importance Factor I_w = as indicated on Structural Drawings
      3) Wind Speed Category = as indicated on Structural Drawings
      4) Other applicable criteria indicated on Structural Drawings.

   b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
      1) Load Duration: 60 seconds or less.

   c. Maximum Lateral Deflection: For the following types of glass supported on all four edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch (25 mm), whichever is less.
      1) For insulating glass.
      2) For laminated glass
      3) For monolithic-glass lites heat treated to resist wind loads.

   d. Minimum Glass Thickness for Exterior Lites: Not less than 1/4" (6 mm).
   e. Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each tint color indicated throughout Project.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick, unless otherwise indicated.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units with lites 6 mm thick and a nominal 1/2-inch- (13-mm-) wide interspace, unless otherwise indicated.
4. Center-of-Glass U-Values: NFRC 100 methodology using LBL-35298 WINDOW 4.1 computer program, expressed as Btu/ sq. ft. x h x deg F (W/sq. m x K).
5. Center-of-Glass Solar Heat Gain Coefficient: NFRC 200 methodology using LBL-35298 WINDOW 4.1 computer program.
6. Solar Optical Properties: NFRC 300.

1.4 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: For the following products, in the form of 12-inch- (300-mm-) square Samples for glass and of 12-inch- (300-mm-) long Samples for sealants. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

1. Insulating glass for each designation indicated.
2. Each type of laminated glass specified.
3. Each type of fire-rated glass specified.
4. Spandrel glass
5. For each color (except black) of exposed glazing sealant indicated.

C. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

D. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

F. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

G. Product Test Reports: From a qualified testing agency indicating the following products comply with requirements, based on comprehensive testing of current products:

1. Insulating glass.
2. Coated float glass.
3. Glazing sealants.
4. Fire resistive glazing

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.

B. Source Limitations: Obtain each type of glass from one primary-glass manufacturer.

C. Source Limitations for Glass Sputter-Coated with Solar-Control Low-E Coatings: Where solar-control low-e coatings of a primary glass manufacturer that has established a certified fabricator program is specified, obtain sputter-coated solar-control low-e-coated glass in fabricated units from a manufacturer that is certified by coated-glass manufacturer

D. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.

1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.

1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

F. Preconstruction Adhesion and Compatibility Testing: Submit to elastomeric glazing sealant manufacturers, for testing indicated below, samples of each glass type, tape sealant, gasket, glazing accessory, and glass-framing member that will contact or affect elastomeric glazing sealants.

1. Use manufacturer's standard test methods to determine whether priming and other specific preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
   a. Perform tests under normal environmental conditions replicating those that will exist during installation.

2. Submit not fewer than nine pieces of each type and finish of glass-framing members and each type, class, kind, condition, and form of glass (monolithic, laminated, and insulating units) as well as one sample of each glazing accessory (gaskets, tape sealants, setting blocks, and spacers).
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain sealant manufacturer's written instructions for corrective measures, including the use of specially formulated primers.
5. Testing will not be required if elastomeric glazing sealant manufacturers submit data based on previous testing of current sealant products for adhesion to, and compatibility with, glazing materials matching those submitted.

G. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by UL, for fire ratings indicated, based on testing according to NFPA 252.

H. Glazing for Fire-Rated Window Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257.

I. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201 and ANSI Z97.1.

1. Subject to compliance with requirements, permanently mark safety glass with certification label of Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
2. Safety glass includes fully tempered glass, laminated glass and fire-resistant glass.

J. Fire-Rated Glass: Permanently mark fire-rated glass with certification label of certification agency acceptable to authorities having jurisdiction indicating manufacturer name, test standard and fire-rating.

K. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. SIGMA Publications: SIGMA TM-3000, "Vertical Glazing Guidelines."
2. GANA Publications: GANA'S "Glazing Manual" and "Laminated Glass Design Guide."
3. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."

L. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following inspecting and testing agency:

1. Insulating Glass Certification Council.
2. Associated Laboratories, Inc.

3. National Accreditation and Management Institute.

M. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F (4.4 deg C).

1.8 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Manufacturer's Special Warranty on Coated-Glass Products: Written warranty, made out to Owner and signed by coated-glass manufacturer agreeing to furnish replacements for those coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Written warranty, made out to Owner and signed by insulating-glass manufacturer agreeing to furnish replacements for insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

D. Manufacturer's Special Warranty on Laminated Glass: Written warranty, made out to Owner and signed by laminated-glass manufacturer agreeing to furnish replacements for laminated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: Five years from date of Substantial Completion.

E. Manufacturer's Special Warranty on Fire Rated Glass: Written warranty, made out to Owner and signed by insulating-glass manufacturer agreeing to furnish replacements for insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRIMARY FLOAT GLASS

A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), Quality q3 (glazing select); Class 1 unless otherwise indicated in schedules at the end of Part 3.

2.2 HEAT-TREATED FLOAT GLASS

A. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.

A. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent glass, flat); Quality q3 (glazing select); class, kind, and condition as indicated in schedules at the end of Part 3.

2.3 COATED FLOAT GLASS

A. General: Provide coated glass complying with requirements indicated in this Article and in schedules at the end of Part 3.

1. Provide Kind HS (heat-strengthened) coated float glass in place of coated annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated.

B. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and heat treatment (if any), and complying with other requirements specified in schedules at the end of Part 3.

1. Basis of Design Product: Solarban 70 by Vitro Architectural Glass or equal.

C. Silicone-Coated Spandrel Glass: ASTM C 1048, Condition C, Type I, Quality-Q3, and complying with other requirements specified.

1. Basis of Design Product: Opacicoat-300 by ICD Coatings or equal
2. Color(s): As selected by Architect from manufacturer’s full range.
3. Thickness of Coating: 6.50 mils dry, for fallout protection

2.4 FIRE RATED GLAZING

A. Fire-Rated Glazing Product (Laminated Ceramic Glazing Material): Proprietary Category I and II safety glazing product in the form of 2 lites of clear ceramic glazing material laminated together to produce a laminated lite of 5/16-inch nominal thickness; polished on both surfaces, weighing 4 lb/sq. ft.; and as follows:

1. Fire-Protection Rating: As indicated for the assembly in which glazing material is installed, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
2. Polished on both surfaces, transparent.
3. Product: "FireLite Plus Premium" by Nippon Electric Glass Co., Ltd., and distributed by Technical Glass Products.

2.5 LAMINATED GLASS

A. Laminated Glass: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified, including those in the Laminated-Glass Schedule at the end of Part 3.

B. Interlayer: Interlayer material as indicated below, clear or in colors, and of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.

1. Interlayer Material: Polyvinyl butyral sheets
2. Interlayer Thickness: .030"except provide .060" thickness for laminating two lites of heat strengthened glass together, for acoustical rating required and where scheduled.
3. Interlayer Color: Clear except provide frosted interlayer at bathrooms.

C. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets as follows:

1. Laminate lites with polyvinyl butyral interlayer in autoclave with heat plus pressure.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Preassembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in the Insulating-Glass Schedule at the end of Part 3.

1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated.

B. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated in the Insulating-Glass Schedule at the end of Part 3 are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.

C. Sealing System: Dual seal, with primary and secondary sealants as follows:

1. Manufacturer's standard sealants.

D. Spacer Specifications: Manufacturer's standard spacer material and construction complying with the following requirements:

1. Aluminum with black finish for structural silicone glazing applications
2. Aluminum with mill or clear-anodized finish for all other applications.
3. Desiccant: Molecular sieve or silica gel, or blend of both.
4. Corner Construction: Manufacturer's standard corner construction.

2.7 ELASTOMERIC GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:

1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range for this characteristic.
4. Field-applied sealants shall have a VOC content of not more than 250 g/L.

B. Single-Component Neutral-Curing Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 50; Uses NT, M, G, A, and, as applicable to joint substrates indicated, O.

1. Products:
   a. Dow Corning Corporation; 791.
   b. Dow Corning Corporation; 795.
   c. GE Silicones; SilPruf NB SCS9000.
   d. GE Silicones; UltraPruf II SCS2900.
   e. Pecora Corporation; 865.
   f. Pecora Corporation; 895.
   g. Pecora Corporation; 898

C. Glazing Sealants for Fire-Resistive and Fire Protective Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper

backing; and complying with ASTM C 1281 and AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

B. Expanded Cellular Glazing Tape: Closed-cell, PVC foam tape; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1, for glazing applications in which tape acts as the primary sealant.
2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

C. Glazing Tapes for Fire-Resistive and Fire Protective Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

2.9 GLAZING GASKETS

A. Glazing gaskets for aluminum windows are specified in Division 08 Section "Aluminum Windows ".

2.10 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Silicone elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating

2.11 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and

bite complying with written instructions of product manufacturer and referenced glazing standard, to comply with system performance requirements.

B. Grind smooth and polish exposed glass edges.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep system.
3. Minimum required face or edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where the length plus width is larger than 50 inches (1270 mm) as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with stretch allowance during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 PROTECTION AND CLEANING

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkaline deposits, or stains; remove as recommended by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

3.8 GLASS SCHEDULE

A. Exterior Glazing:

1. Exterior Doors: Provide 1 inch insulated tempered glass as follows:

a. Outboard Lite: 1/4-inch thick clear, fully tempered (Kind FT) glass, low-E coated on the second surface.
1) Low-Emissivity Sputter Coating: Solarban 70; by Vitro Architectural Glass

b. Air Space: 1/2 inch, argon filled.
c. Inboard Lite: 1/4-inch thick clear, fully tempered (Kind FT) glass
d. Performance Characteristics:
1) Visible Light Transmittance: Min 64%.
2) Winter Nighttime U-Value: Max. 0.24
3) Solar Heat Gain Coefficient (SHGC): Max. 0.27
4) Light to Solar Gain: 2.37
5) Outdoor Visible Light Reflectance: 12%

2. Windows, Safety Glazing: Provide 1 inch insulated tempered glass at all windows within 18” of a walking surface, as follows:

a. Outboard Lite: 1/4-inch thick clear, fully tempered (Kind FT) glass, low-E coated on the second surface.
1) Low-Emissivity Sputter Coating: Solarban 70; by Vitro Architectural Glass

b. Air Space: 1/2 inch, argon filled.
c. Inboard Lite: 1/4-inch thick clear, fully tempered (Kind FT) glass
d. Performance Characteristics:
1) Visible Light Transmittance: Min 64%.
2) Winter Nighttime U-Value: Max. 0.24
3) Solar Heat Gain Coefficient (SHGC): Max. 0.27
4) Light to Solar Gain: 2.37
5) Outdoor Visible Light Reflectance: 12%

3. Windows, General Use: Provide 1 inch insulated glass as follows:

a. Outboard Lite: 1/4-inch thick clear, annealed glass, low-E coated on the second surface.

1) Low-Emissivity Sputter Coating: Solarban 70; by Vitro Architectural Glass

b. Air Space: 1/2 inch, argon filled.
c. Inboard Lite: 1/4-inch thick clear, annealed glass
d. Performance Characteristics:
   1) Visible Light Transmittance: Min 64%.
   2) Winter Nighttime U-Value: Max. 0.24
   3) Solar Heat Gain Coefficient (SHGC): Max. 0.27
   4) Light to Solar Gain: 2.37
   5) Outdoor Visible Light Reflectance: 12%

4. Windows at Bathroom Locations: Provide 1 inch insulated laminated glass units as follows:

   a. Outboard Lite: 1/4-inch thick clear float glass, low-E coated on the second surface.
      1) Low-Emissivity Sputter Coating: Solarban 70; by Vitro Architectural Glass

   b. Air Space: 1/2 inch, argon filled.
   c. Inboard Lite: 1/4-inch thick clear, laminated glass with frosted translucent interlayer as selected by Architect.
   d. Performance Characteristics:
      1) Visible Light Transmittance: Min 64%.
      2) Winter Nighttime U-Value: Max. 0.24
      3) Solar Heat Gain Coefficient (SHGC): Max. 0.27
      4) Light to Solar Gain: 2.37
      5) Outdoor Visible Light Reflectance: 12%

5. Windows where Spandrel Glazing is Indicated: Provide 1 inch insulated glass, as follows:

   a. Outboard Lite: 1/4-inch thick clear, heat strengthened (Kind HS) float glass, low-E coated on the second surface.
      1) Low-Emissivity Sputter Coating: Solarban 70; by Vitro Architectural Glass

   b. Air Space: 1/2 inch, argon filled.
   c. Inboard Lite: 1/4-inch thick clear, heat strengthened (Kind HS) float glass, with silicone coating on the #4 surface
      1) Silicone Coating: Opacicoat-300 by ICD Coatings
      2) Color: As selected by Architect.

B. Interior Glazing, as Scheduled:

1. Non-Fire Rated Doors, Transoms, Sidelights and Borrowed Lights: 1/4 inch clear tempered glass.

2. Fire Rated Doors, Transoms, Sidelights and Borrowed Lights: Laminated ceramic glazing material 5/16 inches thick; "FireLite Plus Premium" by Nippon Electric Glass Co., Ltd., and distributed by Technical Glass Products.

END OF SECTION 088000

SECTION 089000 - LOUVERS AND VENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section Includes the Following:

1. Fixed, extruded-aluminum louvers.

B. Related Sections Include the Following:

1. Division 07 Section "Joint Sealants" for sealants installed in perimeter joints between louver frames and adjoining construction.
2. Division 23 Sections for louvers that are a part of mechanical equipment.

1.2 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide louvers capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act on vertical projection of louvers.

1. Wind Loads: Uniform pressure (velocity pressure) of 18 lbf per sq. ft. acting inwards.

B. Thermal Movements: Provide louvers that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Air-Performance, Water-Penetration, Air-Leakage, and Wind-Driven Rain Ratings: Provide louvers complying with performance requirements indicated, as demonstrated by

testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other Work. Show blade profiles, angles, and spacing.

C. Samples for Verification: For each type of metal finish required.

D. Product Certificates: Signed by manufacturers stating the location of the material manufacturer and the distance from the manufacturer to the Project site.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain louvers and vents through one source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

B. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

1. Basis-of-Design Product: The design for each louver is based on the product named. Subject to compliance with requirements, provide either the named product or approved equivalent by one of the other manufacturers specified.
   a. Construction Specialties.
   b. Airolite Co.
   c. Reliable Metal Products.
   d. Industrial Acoustics Company.

2.2 MATERIALS

A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy 6063-T5 or T-52.T-52.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Aluminum Castings: ASTM B 26/B 26M, alloy 319.

D. Fasteners: Of same basic metal and alloy as fastened metal or 300 Series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.

1. Use types and sizes to suit unit installation conditions.
2. Use Phillips flat-head screws for exposed fasteners, unless otherwise indicated.

E. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION, GENERAL

A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

D. Include supports, anchorages, and accessories required for complete assembly.

E. Where indicated, provide subsills made of same material as louvers or extended sills for recessed louvers.

F. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer, concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.4 FIXED, EXTRUDED-ALUMINUM LOUVERS

A. Horizontal, Single Drainable-Blade Louver:

1. Basis-of-Design Product: Ruskin Model ELF375DX Drainable Stationary Louvers.
2. Finish: Fluoropolymer 3-Coat System.
3. Depth: 4-inches.

4. Frame and Blade Nominal Thickness: As required to comply with structural performance requirements, but not less than 0.081 inch.
5. Mullion Type: Fixed, hidden mullions shall allow for continuous line appearance for up to 120"
6. Performance Requirements:
   a. Free Area: 54%.
   b. Point of Beginning Water Penetration: 873 fpm at .01 oz/sf.

7. Sizes: Refer to Contract Drawings for sizes, configurations, and locations.
8. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.5 LOUVER SCREENS

A. General: Provide screen at each exterior louver.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Bird screening. NO Insect screening allowed.

B. Secure screens to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same kind and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Same finish as louver frames to which louver screens are attached.

D. Louver Screening for Aluminum Louvers:

1. Bird Screening: Aluminum, 1/2-inch- (12.7-mm-) square mesh, 0.063-inch (1.6-mm) wire.

2.6 BLANK-OFF PANELS

A. Insulated, Blank-Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.

1. Thickness: 1 inch (25 mm).
2. Metal Facing Sheets: Aluminum sheet, not less than 0.032-inch (0.81-mm) nominal thickness.
3. Insulating Core: Rigid, glass-fiber-board insulation.
4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard channel frames, with corners mitered and with same finish as panels.
5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
6. Panel Finish: As selected by Architect.
7. Attach blank-off panels with clips.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish louvers after assembly.

2.8 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.

B. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Fluoropolymer 3-Coat System: Manufacturer's standard 3-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
   a. Color(s): As selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

F. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.

G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Division 7 Section "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed surfaces of louvers that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 089000

SECTION 092100 - GYPSUM PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Gypsum plaster on new CMU walls.

1.2 ACTION SUBMITTALS

A. Product Data consisting of manufacturer's product specifications and installation instructions for each product, including data showing compliance with specified requirements.

B. Samples for verification in units at least 12 inches (300 mm) square of each type of finish indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: Submit certificate signed by manufacturer for each kind of plaster aggregate certifying that materials comply with requirements.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Installer: A firm having not less than five (5) years successful experience in plaster work similar to work of this project.

B. Workmen: Skilled plasterers who have demonstrated experience in the type of work specified and who are thoroughly familiar with the requirements of the work. In acceptance or rejection of plaster work, no allowance will be made for lack of skill on the part of the workmen.

C. Single-Source Responsibility: Obtain gypsum plaster from one source and by a single manufacturer.

D. Mockups: Prior to installing plaster work, construct panels for each type of finish and application required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build

mockups to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate mockups on-site in the location indicated or, if not indicated, as directed by Architect.
2. Erect mockups 48 by 48 inches (1200 by 1200 mm) by full thickness in presence of Architect using materials, including lath, support system, and control joints indicated for final Work.
3. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Simulate finished lighting conditions for review of mockups
6. Obtain Architect's approval of mockups before plastering.
7. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed plaster Work.
    a. When directed, remove mockups from Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages, containers, or bundles, labeled with manufacturer's name, product brand name, and lot number.

B. Store materials inside, under cover, and dry, protected from weather, direct sunlight, surface contamination, aging, corrosion, and damage from construction traffic and other causes. Protect plaster material from dampness and intrusion of foreign material.

C. Protect metal cornerbeads and trim from being bent or damaged.

1.6 PROJECT CONDITIONS

A. Environmental Requirements, General: Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.

B. Cold-Weather Requirements: When ambient outdoor temperatures are below 40 deg F (4 deg C), maintain continuous uniform temperature of not less than 40 deg F (4 deg C) nor more than 80 deg F (27 deg C) for at least 7 days before beginning plaster application, during its application, and until plaster is dry but for at least 7 days after application is complete. Distribute heat evenly; prevent concentrated or uneven heat from contacting plaster near heat source.

C. Ventilation: Ventilate building spaces as required to remove water in excess of that required for hydrating plaster. Begin ventilation immediately after plaster is applied and continue until it sets.

D. Protect contiguous work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Gypsum Plasters:
   a. National Gypsum Co.
   b. United States Gypsum Co.

2.2 PLASTER MATERIALS

A. Base-Coat Plasters: ASTM C 28, types as indicated below:

1. Standard-strength gypsum neat plaster with a minimum, average, dry compressive strength of 875 psi per ASTM C 472 for a mix of 100 lb of plaster and 2 cu. ft. of sand.

B. Finish-Coat Plasters: Gypsum Keene's cement, ASTM C 61.

C. Finishing Hydrated Limes: ASTM C 206, type S, special hydrated lime for finishing purposes.

D. Aggregates for Base-Coat Plasters: ASTM C 35, type as indicated below:

1. Sand aggregate, unless otherwise indicated.

E. Aggregates for Finish-Coat Plaster with Floated Finish: ASTM C 35, sand aggregate. graded per ASTM C 842.

F. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Standard-Strength Gypsum Neat Plaster:
   a. Red Top Gypsum Plaster; United States Gypsum Co.

2. Gypsum Keene's Cement:
   a. Red Top Keene's Cement; United States Gypsum Co.

3. Finishing Hydrated Limes, Type S:
   a. Ivory Finish Lime; United States Gypsum Co.
   b. Snowdrift Finish Lime; United States Gypsum Co.

2.3 LATH

A. Expanded-Metal Lath: Fabricate expanded-metal lath from uncoated or zinc-coated (galvanized) steel sheet to produce lath complying with ASTM C 847 for type,

configuration, and other characteristics indicated below, with uncoated steel sheet coated after fabrication into lath.

1. Diamond-Mesh Lath: Weighing 3.4 lb/sq. yd. (1.8 kg/sq. m).
   a. Provide self-furring type for plastering directly on masonry, concrete, plywood and other flat surfaces.
   b. Provide rib lath for ceiling locations.
   c. Provide expanded metal flat diamond mesh lath for all other wall locations.

2.4 ACCESSORIES

A. General: Comply with material provisions of ASTM C 841 and the requirements indicated below; coordinate depth of accessories with thicknesses and number of plaster coats required.

1. Galvanized Steel Components: Fabricated from zinc-coated (galvanized) steel sheet complying with ASTM A 653, G40 (ASTM A 653M, Z90) minimum coating designation.

B. Metal Cornerbeads: Type as indicated below, fabricated from zinc-coated (galvanized) steel.

1. Type: Small nose with expanded flanges reinforced by perforated stiffening rib, for use on columns and for finishing masonry corners.
2. Type: Bull nose, radius 3/4 inch (19 mm) minimum, with expanded flanges, at locations indicated.

C. Strip Reinforcement: Smooth-edge strips of expanded-metal lath fabricated from uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet coated after fabrication; in the following forms:

1. Cornerite: Strips bent lengthwise in center for internal plaster angles not otherwise reinforced by metal lath lapped or carried around.
2. Stripite: Flat strips for reinforcing joints in nonmetallic bases, and between dissimilar plaster bases.

D. Casing Beads: Square-edged style, with short or expanded flanges to suit kinds of plaster bases indicated; of the following material:

1. Material: Zinc-coated (galvanized) steel.

E. Control Joints: Prefabricated, zinc-coated (galvanized) steel; one-piece type with Folded pair of nonperforated screeds in M-shaped configuration, with expanded or perforated flanges.

1. Provide removable protective tape on plaster face of control joints.

2.5 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Compound: ASTM C 631.

C. Repair and Reinforcing Tape: Open-mesh, glass fiber.

D. Sound Attenuation Blankets: Comply with Section 092900, "Gypsum Board."

2.6 PLASTER MIXES AND COMPOSITIONS

A. Plaster Base-Coat Compositions: Comply with ASTM C 842 and manufacturer's written instructions for plaster base-coat proportions that correspond to application methods and plaster bases indicated below:

1. Three-Coat Work over Masonry and Metal Lath: Base coats as indicated below:
   a. Scratch Coat: Standard-strength gypsum plaster with job-mixed sand; 100 lbs plaster to 2 cu. ft. of sand
   b. Brown Coat: Standard-strength gypsum plaster with job-mixed sand; 100 lbs plaster to 3 cu. ft. of sand.

B. Finish Coats: Proportion materials in parts by dry weight for finish coats to comply with the following requirements for each type of finish coat and texture indicated:

1. Float Finishes: Finish-coat proportion as indicated below:
   a. Gypsum Keene's Cement: 2 part plaster to 2 parts lime to 6 parts sand.

2.7 MIXING

A. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF LATH AND FURRING, GENERAL

A. Interior Lathing and Furring: Install materials indicated for plaster to comply with ASTM C 841.

B. Isolation: Where lathing and metal support system abuts building structure horizontally and where partition or wall abuts overhead structure, sufficiently isolate from structural movement to prevent transfer of loading from building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.

1. Frame both sides of control joints independently and do not bridge joints with furring and lathing or accessories.

3.2 METAL LATHING

A. Install according to ASTM C 841. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated that comply with referenced lathing installation standards, and as specified in Part 2 “Lath” Article of this Section.

3.3 INSTALLATION OF PLASTERING ACCESSORIES

A. General: Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated. Miter or cope accessories at corners; install with tight joints and in alignment. Attach accessories securely to plaster bases to hold accessories in place and in alignment during plastering.

B. Accessories: Provide the following types to comply with requirements indicated for location:

1. Cornerbeads: Install at external corners.
2. Casing Beads: Install at terminations of plaster work, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.
3. Control Joints: Install at locations indicated or, if not indicated, at spacings and locations required by referenced standard, recommended by plaster manufacturer, and approved by Architect. Spacing between joints in either direction shall not exceed the following:
   a. Partitions: 30 feet (9 m).
   b. Ceilings: 50 feet (15 m) where ceilings are isolated from partitions; 30 feet (9 m) where ceilings are not isolated from partitions.

3.4 PLASTER APPLICATION, GENERAL

A. Prepare monolithic surfaces for bonded base coats and use bonding compound to comply with requirements of referenced plaster application standards for conditioning monolithic surfaces.

B. Wet unit masonry surfaces to reduce excessive suction.

C. Tolerances: Do not deviate more than plus or minus 1/8 inch in 10 feet (3 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed at any location on surface.

D. Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches (152 mm) at each jamb anchor.

E. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.

F. Plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where plaster is not terminated at metal frame by casing beads, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.

G. Apply thicknesses and number of coats of plaster to match existing.

H. Concealed Plaster: Where plaster application will be concealed by wood paneling, above suspended ceilings and in similar locations, finish coat may be omitted; where concealed behind cabinets, similar furnishings, and equipment, apply finish coat; where used as a base for adhesive application of tile and similar finishes, omit finish coat, coordinate thickness with overall dimension as shown, and comply with tolerances specified.

3.5 PLASTER APPLICATION

A. Plaster Application Standard: Apply plaster materials, composition, mixes, and finishes indicated to comply with ASTM C 842.

B. Execute work to provide a finish free from depressions, bulges, slick spots, scratches, brush and tool marks, cracks, visible joints, crazing, and discolorations. Surfaces shall have true planes, with uniform texture to match the adjoining surfaces and with lines and arises that are straight, plumb and level. Work shall be true to grounds and guidelines and free from blemishes and defects of any sort.

1. Ventilation: During the application of each coat of interior plaster, keep the exterior openings closed until the plaster has set, then adjust for proper ventilation to regulate the drying and curing of the plaster.
2. Thickness of Plaster: Match existing.
3. Joints: Lap joints in succeeding coats including joints at interior angles; continue past the angle and corner and feather off on adjacent wall.

C. Scratch (First) Coat on Three Coat Work:

1. Apply plaster with sufficient materials and pressure to force plaster to form good bond with solid base material and cover well.
2. Thickness of Scratch Coat: Approximately 3/8".
3. Leave surface level.
4. Scratch this coat and allow to set and thoroughly dry out before the application of the brown coat.

D. Brown (Second) Coat on Three Coat Work:

1. Do not apply brown coat until after scratch coat has hardened, not sooner than 48 hours after application of scratch coat. Evenly dampen scratch coat to provide uniform suction before brown coat is applied.
2. Prior to application of gypsum brown coat place plaster screeds at angles and corners and at intervals of 8' in both walls and ceilings unless grounds occur at smaller intervals.
3. Thickness of Brown Coat: Approximately 3/8".

4. Bring brown coat out to ground and required lines, to true, even surfaces. Straighten with rod and darby and leave rough to accept finish coat.
5. Moist cure brown coat for 48 hours after application and then allow coat to set and partially dry out.

E. Finish Coat:

1. Thickness of Finish: As thin as possible; preferably 1/16 to no more than 3/32 inch thick and treated and finished as directed.
2. Before application of finish coat, cut out shrinkage cracks and fill with scratch coat mortar.
3. Apply finish coats well ground to scratched surfaces, then double back to a true plane, filling all imperfections.
   a. For sand float finish, float using a shingle, cork, carpet, rubber wood, or sponge float to bring aggregate to the surface to produce a finish of uniform smooth texture free of slick spots, cat faces and other blemishes. Use water sparingly.

4. Finish surfaces plumb, straight, level, and true throughout, varying from a true plane by not more than 1/8" when tested with a 10' straightedge at any point and finish surface to match adjacent existing texture.

F. Washdown: When plaster work has been completed, wash down the new plaster with a zinc sulphate solution (2 pounds per gallon of water) and allow to dry.

3.6 CUTTING AND PATCHING

A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

B. Leave plaster ready for painting.

3.7 CLEANING AND PROTECTING

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering. When plastering is completed, remove unused materials, containers, and equipment and clean floors of plaster debris.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure plaster work is without damage or deterioration at the time of Substantial Completion.

3.8 CURING

A. Allow plaster to cure 30 days prior to application of paint or other finishes.

END OF SECTION 092100

SECTION 092116.23 - GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Gypsum board shaft wall assemblies.

1.2 ACTION SUBMITTALS

A. Product Data: For each component of gypsum board shaft wall assembly.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or with gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: Provide materials and construction identical to those of assemblies tested according to ASTM E 90 and classified according to ASTM E 413 by a testing and inspecting agency.

2.2 GYPSUM BOARD SHAFT WALL ASSEMBLIES

A. Fire-Resistance Rating: 1 hour and 2 hours as indicated.

B. STC Rating: As indicated.

C. Studs: Manufacturer's standard profile for repetitive members, corner and end members, and fire-resistance-rated assembly indicated.

1. Depth: 2-1/2 inches (64 mm), 4 inches (102 mm) and 6 inches (152 mm) as indicated on the Partition Type Drawing.
2. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

D. Runner Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches (51 mm) long and matching studs in depth.

1. Minimum Base-Metal Thickness: Matching steel studs.

E. Room-Side Finish: As indicated.

F. Shaft-Side Finish: Gypsum shaftliner board, moisture- and mold-resistant Type X.

G. Insulation: Sound attenuation blankets.

2.3 PANEL PRODUCTS

A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. Gypsum Shaftliner Board, Type X: ASTM C 1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with paper faces.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Lafarge North America, Inc.; Firecheck Type X Shaftliner.
   b. National Gypsum Company; Gold Bond Brand Fire-Shield Shaftliner.
   c. USG Corporation; Sheetrock Brand Gypsum Liner Panel.
   d. American Gypsum; Shaft Liner.

2. Thickness: 1 inch (25.4 mm).
3. Long Edges: Double bevel.

C. Gypsum Shaftliner Board, Moisture- and Mold-Resistant Type X: ASTM C 1396/C 1396M; manufacturer's proprietary fire-resistive liner panels with moisture- and mold-resistant core and surfaces.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Lafarge North America, Inc.; Firecheck Moldcheck Type X Shaftliner.
   b. National Gypsum Company; Gold Bond Brand Fire-Shield Shaftliner XP.

c. USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panel.

2. Thickness: 1 inch (25.4 mm).
3. Long Edges: Double bevel.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

D. Gypsum Board: As specified in Section 092900 "Gypsum Board."

2.4 NON-LOAD-BEARING STEEL FRAMING

A. Steel Framing Members: Comply with ASTM C 645 requirements for metal unless otherwise indicated.

1. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.

2.5 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with manufacturer's written recommendations.

B. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Section 092900 "Gypsum Board" that comply with gypsum board shaft wall assembly manufacturer's written recommendations for application indicated.

C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

D. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.

1. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing according to ASTM E 488 conducted by a qualified testing agency.
2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing according to ASTM E 1190 conducted by a qualified testing agency.

E. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from slag wool, or rock wool; Provide mineral-fiber SAFB.

F. Acoustical Sealant: As specified in Section 079200 "Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to which gypsum board shaft wall assemblies attach or abut, with Installer present, including hollow-metal frames, elevator hoistway door frames, cast-in anchors, and structural framing. Examine for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Sprayed Fire-Resistive Materials: Coordinate with gypsum board shaft wall assemblies so both elements of Work remain complete and undamaged. Patch or replace sprayed fire-resistive materials removed or damaged during installation of shaft wall assemblies to comply with requirements specified in Section 078100 "Applied Fireproofing."

B. After sprayed fire-resistive materials are applied, remove only to extent necessary for installation of gypsum board shaft wall assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

3.3 INSTALLATION

A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated, manufacturer's written installation instructions, and ASTM C 754 other than stud-spacing requirements.

B. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.

C. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.

1. Reinforcing: Where handrails directly attach to gypsum board shaft wall assemblies, provide galvanized steel reinforcing strip with 0.033-inch (0.84-mm) minimum thickness of base metal (uncoated), accurately positioned and secured behind at least one layer of face panel.

D. Penetrations: At penetrations in shaft wall, maintain fire-resistance rating of shaft wall assembly by installing supplementary steel framing around perimeter of penetration

and fire protection behind boxes containing wiring devices, elevator call buttons, elevator floor indicators, and similar items.

E. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels, while maintaining continuity of fire-rated construction.

F. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect while maintaining fire-resistance rating of gypsum board shaft wall assemblies.

1. Install control joints on 30 foot maximum centers, for all partitions, at locations indicated, and as detailed. Align control joints with door frames wherever possible, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.

G. Sound-Rated Shaft Wall Assemblies: Seal gypsum board shaft walls with acoustical sealant at perimeter of each assembly where it abuts other work and at joints and penetrations within each assembly.

H. Cant Panels: At projections into shaft exceeding 4 inches (102 mm), install 1/2- or 5/8-inch- (13- or 16-mm-) thick gypsum board cants covering tops of projections.

1. Slope cant panels at least 75 degrees from horizontal. Set base edge of panels in adhesive and secure top edges to shaft walls at 24 inches (610 mm) o.c. with screws fastened to shaft wall framing.
2. Where steel framing is required to support gypsum board cants, install framing at 24 inches (610 mm) o.c. and extend studs from the projection to shaft wall framing.

I. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.4 IDENTIFICATION

A. Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

1. Be located in accessible concealed floor, floor-ceiling or attic spaces.
2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition.
3. Include lettering not less than 0.5 inch (12.7 mm)) in height, incorporating the followings wording: “FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS,” or other wording to reflect the wall type as indicated on the Code Summary Drawings.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092116.23

SECTION 092150 - GYPSUM PLASTER REPAIR AND RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Repair of existing plaster on interior walls and ceilings to the extent indicated on drawings.
2. Repair of existing plaster on interior walls and ceilings that requires cutting or removal to accommodate new conduit, piping, or other components of mechanical and electrical systems or other new construction.

1.2 SUBMITTALS

A. Product Data consisting of manufacturer's product specifications and installation instructions for each product, including data showing compliance with specified requirements.

B. Samples for verification in units at least 12 inches (300 mm) square of each type of finish indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.

C. Material Certificates: Submit certificate signed by manufacturer for each kind of plaster aggregate certifying that materials comply with requirements.

1.3 QUALITY ASSURANCE

A. Installer: A firm having not less than five (5) years successful experience in plaster work similar to work of this project.

B. Workmen: Skilled plasterers who have demonstrated experience in the type of work specified and who are thoroughly familiar with the requirements of the work. In acceptance or rejection of plaster work, no allowance will be made for lack of skill on the part of the workmen.

C. Single-Source Responsibility: Obtain gypsum plaster from one source and by a single manufacturer.

D. Fire-Test-Response Characteristics: Where fire-resistance-rated plaster assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: As indicated by GA File Numbers in GA-600 "Fire Resistance Design Manual" or design designations in UL "Fire Resistance

Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

E. Mockups: Prior to proceeding with plaster repair and restoration work, prepare mock-up panels for each type of finish and application required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.

1. Provide in-place 2' x 2' (min. size) sample of each type of repair work at existing plaster wall or ceiling surfaces to demonstrate quality of work expected in finished work in location directed by Architect.
2. Execute mock-up in presence of Architect using all materials indicated for final Work including lath, support system, and control joints.
3. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before proceeding with remainder of plaster repair and restoration work.
6. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed plasterwork.
7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages, containers, or bundles, labeled with manufacturer's name, product brand name, and lot number.

B. Store materials inside, under cover, and dry, protected from weather, direct sunlight, surface contamination, aging, corrosion, and damage from construction traffic and other causes. Protect plaster material from dampness and intrusion of foreign material.

1.5 PROJECT CONDITIONS

A. Environmental Requirements, General: Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.

B. Temperature Requirements: Maintain continuous uniform room temperature of not less than 40 deg F (4 deg C) nor more than 80 deg F (27 deg C) for at least 7 days before beginning plaster application, during its application, and until plaster is dry but for at least 7 days after application is complete. Distribute heat evenly; prevent concentrated or uneven heat from contacting plaster near heat source.

C. Ventilation Requirements: Ventilate building spaces as required to remove water in excess of that required for hydrating plaster. Begin ventilation immediately after plaster is applied and continue until it sets.

D. Protect contiguous work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Gypsum Plasters and Accessories:
   a. National Gypsum Co.
   b. United States Gypsum Co.

2.2 LATH

A. Expanded-Metal Lath: Fabricate expanded-metal lath from uncoated or zinc-coated (galvanized) steel sheet to produce lath complying with ASTM C 847 for type, configuration, and other characteristics indicated below, with uncoated steel sheet coated after fabrication into lath.

1. Diamond-Mesh Lath: Weighing 3.4 lb/sq. yd. (1.8 kg/sq. m).
   a. Provide self-furring type for plastering directly on masonry, concrete, plywood and other flat surfaces.
   b. Provide rib lath for ceiling locations.
   c. Provide expanded metal flat diamond mesh lath for all other locations.

2.3 ACCESSORIES

A. General: Comply with material provisions of ASTM C 841 and the requirements indicated below; coordinate depth of accessories with thicknesses and number of plaster coats required.

1. Galvanized Steel Components: Fabricated from zinc-coated (galvanized) steel sheet complying with ASTM A 653, G40 (ASTM A 653M, Z90) minimum coating designation.

B. Metal Cornerbeads: Type as indicated below, fabricated from zinc-coated (galvanized) steel.

1. Type: Small nose with perforated flanges, for use on curved corners.
2. Type: Small nose with expanded flanges reinforced by perforated stiffening rib, for use on columns and for finishing masonry corners.
3. Type: Bull nose, radius 3/4 inch (19 mm) minimum, with expanded flanges, at locations indicated.

C. Strip Reinforcement: Smooth-edge strips of expanded-metal lath fabricated from uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet coated after fabrication; in the following forms:

1. Cornerite: Strips bent lengthwise in center for internal plaster angles not otherwise reinforced by metal lath lapped or carried around.
2. Stripite: Flat strips for reinforcing joints in gypsum lath, nonmetallic bases, and between dissimilar plaster bases.

D. Casing Beads: Square-edged style, with short or expanded flanges to suit kinds of plaster bases indicated; of the following material:

1. Material: Zinc-coated (galvanized) steel.

E. Control Joints: Prefabricated, zinc-coated (galvanized) steel; one-piece type with folded pair of nonperforated screeds in M-shaped configuration, with expanded or perforated flanges.

1. Provide removable protective tape on plaster face of control joints.

2.4 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Compound: ASTM C 631.

C. Repair and Reinforcing Tape: Open-mesh, glass fiber.

2.5 PLASTER MATERIALS

A. Base-Coat Plasters: ASTM C 28, types as indicated below:

1. High-strength gypsum neat plaster with a minimum, average, dry compressive strength of 2800 psi (19 MPa) per ASTM C 472 for a mix of 100 lb (45 kg) of plaster and 2 cu. ft. (0.06 cu. m) of sand.

B. Finish-Coat Plasters: Gypsum Keene's cement, ASTM C 61.

C. Finishing Hydrated Limes: ASTM C 206, type S, special hydrated lime for finishing purposes.

D. Aggregates for Base-Coat Plasters: ASTM C 35, type as indicated below:

1. Sand aggregate, unless otherwise indicated.

E. Aggregates for Finish-Coat Plaster with Floated Finish: ASTM C 35, sand aggregate. graded per ASTM C 842.

F. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. High-Strength Gypsum Neat Plaster:
   a. Structo-Base; United States Gypsum Co.

2. Gypsum Keene's Cement:
   a. Red Top Keene's Cement; United States Gypsum Co.

3. Finishing Hydrated Limes, Type S:
   a. Ivory Finish Lime; United States Gypsum Co.
   b. Snowdrift Finish Lime; United States Gypsum Co.

2.6 PLASTER MIXES AND COMPOSITIONS

A. Plaster Base-Coat Compositions: Comply with ASTM C 842 and manufacturer's written instructions for plaster base-coat proportions that correspond to application methods and plaster bases indicated below:

1. Three-Coat Work over Masonry and Metal Lath: Base coats as indicated below:
   a. Scratch Coat: High-strength gypsum plaster with job-mixed sand.
   b. Brown Coat: High-strength gypsum plaster with job-mixed sand.

B. Finish Coats: Proportion materials in parts by dry weight for finish coats to comply with the following requirements for each type of finish coat and texture indicated:

1. Troweled Finishes: Finish-coat proportion as indicated below:
   a. Gypsum Keene's Cement: 2 parts plaster to 1 part lime.

2.7 MIXING

A. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

B. Use materials without admixture of materials other than those specified herein in each instance. No retempering or retarding of partially set plaster mixes will be permitted, trade custom or local practices notwithstanding.

C. Mix plaster in a batch type mixer at the construction site. Frozen, caked or lumpy material shall not be used. Clean mixer of all set or hardened material before materials for a new batch are loaded.

D. Mix each batch of plaster separately. Thoroughly mix to obtain uniformity of color and workable consistency of mass and only in such quantities as will be used before it has started to set. Retempering after the plaster has started to set will not be permitted and such plaster shall be discarded.

E. Machine mix special finishing hydrated lime with amount of water called for in printed directions of the manufacturer to form a putty and allow to stand for at least 15 minutes before using. Treat hydrated lime in a manner to obtain smooth or lump-free putty. Protect the putty from sun and take preventive measures to prevent excessive evaporation while stored.

F. Batches for base coats shall not be in excess of an amount that can be entirely used within two hours. Batches for finish coats shall not be in excess of an amount that can be entirely used within 30 minutes.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine surfaces to which the work is to be attached or applied and notify Architect of existing conditions that are detrimental to the proper and expeditious installation of the work. Starting of work shall imply acceptance of surfaces to perform work as specified.

3.2 PROTECTION

A. Exercise care to avoid soiling or spattering plaster onto the work of other trades. Use cover cloths or other suitable means of protection.

B. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when plaster repair work is performed in areas from which such items have not been removed.

C. Take precautions to prevent unnecessary staining and smearing of floors by covering the floors with polyethylene.

3.3 PLASTER REMOVAL:

A. Remove deteriorated plaster and corroded metal lath in areas indicated on drawings. Carefully remove all existing plaster that is loose, friable, bubbled, crumbling or otherwise deteriorated or unsuitable to remain. Make clean, sharp edges beveled inward to insure firm bond of new plaster.

3.4 INSTALLATION OF LATH AND FURRING, GENERAL

A. Interior Lathing and Furring: Install materials indicated for plaster to comply with ASTM C 841.

B. Isolation: Where lathing and metal support system abuts building structure horizontally and where partition or wall abuts overhead structure, sufficiently isolate from structural movement to prevent transfer of loading from building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.

1. Frame both sides of control joints independently and do not bridge joints with furring and lathing or accessories.

3.5 METAL LATHING

A. Install expanded-metal lath for applications where plaster base coats are required. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated that comply with referenced lathing installation standards.

3.6 INSTALLATION OF PLASTERING ACCESSORIES

A. General: Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated. Miter or cope accessories at corners; install with tight joints and in alignment. Attach accessories securely to plaster bases to hold accessories in place and in alignment during plastering.

B. Accessories: Provide the following types to comply with requirements indicated for location:

1. Cornerbeads: Install at external corners.
2. Casing Beads: Install at terminations of plaster work, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.
3. Control Joints: Install at locations indicated or, if not indicated, at spacings and locations required by referenced standard, recommended by plaster manufacturer, and approved by Architect. Spacing between joints in either direction shall not exceed the following:
   a. Partitions: 30 feet (9 m).

3.7 PLASTER APPLICATION, GENERAL

A. Prepare monolithic surfaces for bonded base coats and use bonding compound to comply with requirements of referenced plaster application standards for conditioning monolithic surfaces.

B. Tolerances: Do not deviate more than plus or minus 1/8 inch in 10 feet (3 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed at any location on surface.

C. Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches (152 mm) at each jamb anchor.

D. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.

E. Plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where plaster is not terminated at metal

frame by casing beads, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.

F. Apply thicknesses and number of coats of plaster as indicated or as required by referenced standards.

G. Concealed Plaster: Where plaster application will be concealed by wood paneling, above suspended ceilings and in similar locations, finish coat may be omitted; where concealed behind cabinets, similar furnishings, and equipment, apply finish coat; where used as a base for adhesive application of tile and similar finishes, omit finish coat, coordinate thickness with overall dimension as shown, and comply with tolerances specified.

3.8 PLASTER APPLICATION

A. Plaster Application Standard: Apply plaster materials, composition, mixes, and finishes indicated to comply with ASTM C 842.

B. Execute work to provide a finish free from depressions, bulges, slick spots, scratches, brush and tool marks, cracks, visible joints, crazing, and discolorations. Surfaces shall have true planes, with uniform texture to match the adjoining surfaces and with lines and arises that are straight, plumb and level. Work shall be true to grounds and guidelines and free from blemishes and defects of any sort.

1. Ventilation: During the application of each coat of interior plaster, keep the exterior openings closed until the plaster has set, then adjust for proper ventilation to regulate the drying and curing of the plaster.
2. Thickness of Plaster: Match original thickness where patching.
    a. Where plastering over existing walls in which existing surface is uneven and bumpy, adjust plaster thickness as much as possible to compensate for existing surface irregularities.

3. Joints: Lap joints in succeeding coats including joints at interior angles; continue past the angle and corner and feather off on adjacent wall.

C. Scratch (First) Coat:

1. Apply plaster with sufficient materials and pressure to force plaster to form good bond with solid base material and cover well.
2. Leave surface level.
3. Scratch this coat and allow to set and thoroughly dry out before the application of the brown coat.

D. Brown (Second) Coat:

1. Do not apply brown coat until after scratch coat has hardened, not sooner than 48 hours after application of scratch coat. Evenly dampen scratch coat to provide uniform suction before brown coat is applied.

2. Prior to application of gypsum brown coat place plaster screeds at angles and corners and at intervals of 8' in both walls and ceilings unless grounds occur at smaller intervals.
3. Thickness of Brown Coat: Approximately 3/8". Bring brown coat out to ground and required lines, to true, even surfaces. Straighten with rod and darby and leave rough to accept finish coat.
4. Moist cure brown coat for 48 hours after application and then allow coat to set and dry out.

E. Finish Coat:

1. Thickness of Finish: 1/16 to 1/8 inch thick and treated and finished as directed.
2. Before application of finish coat, cut out shrinkage cracks and fill with scratch coat mortar.
3. Apply finish coats well ground to scratched surfaces, then double back and trowel down to a true plane, filling all imperfections. Delay troweling as long as possible and used only to eliminate uneven points and to force aggregate particles into the plaster surface. Avoid excessive troweling.
   a. For smooth coat finish, trowel surface to a smooth, highly polished surface.

4. Finish surfaces plumb, straight, level, and true throughout, varying from a true plane by not more than 1/8" when tested with a 10' straightedge at any point and finish surface to match adjacent existing texture.

F. Washdown: When plaster work has been completed, wash down the new plaster with a zinc sulphate solution (2 pounds per gallon of water) and allow to dry.

3.9 CUTTING AND PATCHING

A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

B. Leave plaster ready for painting.

3.10 PATCHING AND REPAIRS TO EXISTING PLASTER

A. General: Provide patching and repairs to existing plasterwork that is damaged or deteriorated or has been disturbed to accommodate installation of new mechanical or electrical equipment or other construction. Make all such repairs and prepare all surfaces as required to obtain a complete and first class job, as required by job conditions. Comply with plaster manufacturer's recommendations for preparation of surfaces, including installation of lath.

B. Preparation: Scrape and sand existing plaster surfaces to be repaired, removing all loose and peeling paint.

C. Bonding Compound on Existing Plaster Surfaces: Apply bonding agent to existing plaster to receive new repair material and allow to dry until no longer tacky before proceeding.

D. Apply plaster, filling repaired areas in accordance with general plastering provisions described herein. Repair cracks, spalls, gaps and holes, restoring surfaces to a smooth, true, and flush condition.

E. Reinforce interior angles and flat joints with joint tape and embedding material to comply with ASTM C 843 and manufacturer's written recommendations.

F. Bumps and Wavy Surfaces: Thoroughly sand bumps and waves as much as possible and apply skim coats of plaster compound filling all depressions to obtain a smooth and true surface. Contractor may use spackling compound that is compatible for use over plaster if approved in advance by the Architect.

G. Fill hairline cracks with plaster flush and smooth. All other cracks shall have a channel cut along full length of crack of sufficient width to attain tight bond and to receive new plaster. Reverse cut side walls of channel to insure proper bonding of new plaster. Fill channel with successive coats specified herein bringing finish coat out flush for invisible appearance.

H. Skim coat plaster where base is sound but surface is cracked or crazed or surface was not originally an acceptable finish coat or where for other reasons surface is not hard, smooth, acceptable finish for scheduled surface treatment.

I. Do not apply plaster coat over any existing painted surfaces.

J. Execute pointing around fixtures, outlet boxes, switches, plates, piping, registers, and all other elements abutting or extending through plaster.

K. Repaired and patched areas shall match adjoining work in texture and finish.

3.11 CLEANING AND PROTECTING

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering. When plastering is completed, remove unused materials, containers, and equipment and clean floors of plaster debris.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure plaster work is without damage or deterioration at the time of Substantial Completion.

3.12 CURING

A. Allow plaster to cure 30 days prior to application of paint or other finishes.

END OF SECTION 092150

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
   2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 DESCRIPTION

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
   1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
   2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

B. Studs and Runners: ASTM C 645. EQ studs not permitted.
   1. Steel Studs and Runners:
      a. Minimum Base-Metal Thickness: 0.0296 inch, 30 mils.
      b. Depth: As scheduled on Drawings for each location.

C. Slip-Type Head Joints: Provide one of the following:
   1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous cold rolled channel bridging attached to each stud located within 12 inches (305 mm) of the top of studs to provide lateral bracing.

2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
    a. Products: Subject to compliance with requirements, provide one of the following:
        1) ClarkDietrich; MaxTrak Slotted Deflection Track
        2) Steel Network Inc. (The); VertiClip SLD Series.
        3) Telling Industries; True-Action™ Slotted Track.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness: 0.033 inch, 33 mil.

E. Cold-Rolled Channel Bridging and Bracing: Steel, 0.053-inch (1.34-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
1. Depth: 1-1/2 inches (38 mm) unless otherwise indicated.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
1. Minimum Base-Metal Thickness: 0.018 inch (0.45 mm).
2. Depth: 7/8 inch (22.2 mm) unless otherwise indicated.

G. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
1. Configuration: Asymmetrical.

H. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
1. Depth: 3/4 inch (19 mm) unless otherwise indicated.
2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch (0.8 mm).
3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

B. Hanger Attachments to Concrete:
1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.

a. Type: Postinstalled, chemical anchor or postinstalled, expansion anchor.

2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

D. Flat Hangers: Steel sheet, 1 by 3/16 inch (25 by 5 mm) by length indicated.

E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
1. Depth: 1-1/2 inches (38 mm) unless otherwise indicated on Drawings.

F. Furring Channels (Furring Members):
1. Cold-Rolled Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
2. Steel Studs and Runners: ASTM C 645.
a. Minimum Base-Metal Thickness: 0.018 inch, 18 mil.
b. Depth: As indicated on Drawings.
3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.
a. Minimum Base-Metal Thickness: 0.018 inch, 18 mil.
4. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission.
a. Configuration: Asymmetrical or hat shaped.

G. Grid Suspension System for Gypsum Board Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Armstrong World Industries, Inc.; Drywall Grid Systems.
b. Chicago Metallic Corporation; Drywall Grid System.
c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.
1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:
1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size..

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
   1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

B. Coordination with Sprayed Fire-Resistive Materials:
   1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (610 mm) o.c.
   2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.

   1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

E. Cutting, Notching and Boring Holes in Nonstructural Steel Wall Framing:
   1. Flanges and lips of nonstructural steel wall studs shall not be cut or notched.
   2. Holes in webs of nonstructural steel wall studs shall be permitted along the centerline of the web of the framing member, shall not exceed 1-1/2 inches (38 mm) in width or 4 inches (102 mm) in length, and the holes shall not be spaced

less than 24 inches (610 mm) center to center from another hole or less than 10 inches (254 mm) from the bearing end.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.
   1. Space studs at 16 inches (406 mm) o.c. unless otherwise indicated.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
   1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
   2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
      a. Install two studs at each jamb unless otherwise indicated.
      b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
      c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
   3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
   4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
   5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
   6. Curved Partitions:
      a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
      b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches (150 mm) o.c.

D. Install steel studs used as furring with clip angles at midpoint of wall span. Install additional clips to limit deflection to L/240 for walls finished with gypsum wall board and L/360 for walls finished with tile or plaster when subject to 5 psf (239 Pa) lateral load.

E. Direct Furring: Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.5 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
   a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
   a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

F. Installation Tolerances: Install suspension systems that are level to within **1**/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092800 - GLASS-REINFORCED GYPSUM FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following preformed products for interior use, fabricated in glass reinforced gypsum:

1. Column covers.

B. Related Work include the following:

1. Framing and furring for items requiring anchorage are specified in Division 05 Section "Metal Fabrications."
2. Blocking, nailers, and shims for items requiring anchorage are specified in Division 06 Section "Miscellaneous Carpentry."

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Fabricate and install glass-reinforced gypsum units to withstand, without failure or cracking, loads from gravity and structural movement, including thermally induced movement, and to resist other conditions of in-service use that the building will experience.

1.3 ACTION SUBMITTALS

A. Product data for each type of product specified.

B. Shop drawings showing thickness, finish, ornamentation, tolerances, and anchorage details. Indicate attachment methods, imbedded supports, reinforcement, fabrication, joint treatments, and supports.

C. Samples for verifying glass-reinforced gypsum units. Show the full range of variations in detail expected.

1. Glass-Reinforced Gypsum Units: 2-foot- (0.50-m-) long section with finished joint, typical of the units specified.

1.4 INFORMATIONAL SUBMITTALS

A. Installer certificates signed by manufacturer certifying that Installers comply with requirements under "Quality Assurance" Article.

B. Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed glass reinforced gypsum installations similar in material, design, and extent to that indicated for this Project and with a construction record of successful in-service performance.

B. Manufacturer Qualifications: Manufacturer must be able to show that he has at least 5 years experience in this type of work, has experienced personnel, physical facilities, established quality control procedures and management capacity sufficient to produce the required parts without causing delay of the project.

C. Single Source Responsibility for Glass-Reinforced Gypsum Materials: Obtain glass reinforced gypsum fabrications from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide glass-reinforced gypsum units with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

E. Mockups: Prior to installing glass-reinforced gypsum units, construct mockups for each form of construction and finish required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate mockups on site in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Demonstrate the proposed range of aesthetic effects and workmanship.
3. Apply specified finish to column covers.
4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
5. Accepted mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

F. Engineering Responsibility: Engineer glass-reinforced gypsum units by qualified professional engineer legally authorized to practice in the jurisdiction where Project is located.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver glass-reinforced gypsum units in factory-wrapped crates, packaged to keep units dry and free of moisture.

B. Store glass-reinforced gypsum units at Project site to prevent cracking, distortion, warping, staining, or other physical damage.

C. Comply with manufacturer's recommendations for storing and handling units.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabricating glass reinforced gypsum units and show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Enclosure and Environmental Limitations: Do not install glass-reinforced gypsum units until space is enclosed and weatherproof, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1. Acclimatize glass-reinforced gypsum units by removing packaging and storing in the installation space not less than 48 hours before installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by GC Products or equal products of one of the following:

1. Decoform Corporation
2. Casting Designs, Inc.
3. GRG Technologies
4. Plastrglas.

2.2 MATERIALS

A. Gypsum Material: Provide alpha-based, calcined gypsum produced from materials complying with ASTM C 22.

B. Glass Fibers: Comply with ASTM D 578 "E" glass type chopped into 1 inch lengths.

C. Glass-Reinforced Gypsum Units: Glass fiber shall be 5 to 6 percent by weight of gypsum and glass mixture. Provide units identical to those tested for the following performance characteristics, per test method indicated below, by testing and inspecting organizations acceptable to authorities having jurisdiction.

1. Hardness: 95 RH min Rockwell Scale.
2. Modulus of Rupture 3200 - 3500 psi when tested in accordance with ASTM C 109.
3. Modulus of Elasticity: 2.7 - 3.8 x 106 psi when tested in accordance with ASTM C 109.
4. Coefficient of Linear Thermal Expansion: 8 x 10-6 inch/inch/deg Fwhen tested in accordance with ASTM D 696.

D. Material Compatibility: Provide GFRG products with surface characteristics prepared for mortar attachment of ceramic tile.

2.3 MISCELLANEOUS MATERIALS

A. Embedded or Inserted Hardware: Complying with ASTM A 641, and integrated into the members without visibility on the finish face.

B. Fasteners: Self-tapping gypsum wallboard screws.

C. Adhesives: As recommended in manufacturer's printed instructions. and meeting VOC requirements of jurisdiction.

D. Sealants: Refer to Section 079200 for sealant materials.

2.4 FABRICATION

A. Basis of Design Product: GFRG Column Covers by GC Products or equal.

1. Shape: Round
2. Diameter: Sizes as indicated on Drawings.
3. Column Base: As indicated on Drawings.
4. Column Top: As indicated on Drawings.
5. Shaft: Straight
6. Shell Thickness: Minimum 1/4", and minimum ½" at edges.
7. Appearance: Seamless.

B. Fabricate units as large as possible to minimize joints.

C. Fabricate units with smooth finished surfaces, prepared to accept application of ceramic tile finish. Repair hollows, voids, scratches, and finish surface imperfections.

D. Dimensional Tolerances of Units: As follows:

1. Warpage or Bowing: Plus or minus 1/16 inch.
2. Dimensional, all Directions: Plus or minus 1/8 inch.
3. Plane Surface Straightness: Plus or minus 1/8 inch.
4. Overall Assembled Length and Width: Plus or minus 1/8 inch per 10 feet.
5. Out of Round: Plus or minus 1/16 inch..

E. Construct molds for column cover units of materials resulting in smooth, finished products conforming to profiles and dimensions indicated.

F. Combine glass fiber and matrix slurry at rates to achieve desired mix proportions and glass content, and sprayed in accordance with manufacturer's instructions.

G. Embed indicated or required inserts in matrix to develop full strengths. Embed items after required minimum body thickness have been achieved.

H. Form columns to dimensions indicated. Tolerance as specified. Curved panels accurately formed to radii. Fabricate column covers in two sections with vertical butt joint, suitable for field finishing.

I. Carefully remove units from molds and repair hollows, voids, scratches and other surface imperfections. Surface shall be primer ready.

J. Factory fabricate accessories and trim components, hardware, including attachment devices, ready for installation.

K. Provide base and ceiling joints as indicated, or if not indicated, as per manufacturer's standard detail.

2.5 FINISH

A. Column cover panels shall be free of scratches and blemishes; column covers to be field finished as specified in Division 09 Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions with Installer present for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of glass-reinforced gypsum units. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install glass-reinforced gypsum units plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment. B. Erection Tolerances: As follows:

1. Plane Alignment (Panel to Panel): 1/16 inch (1.6 mm).
2. Variation from Plumb: Plus or minus 1/8 inch (3.2 mm) per 10 feet (3 m).
3. Variation from Straightness: Plus or minus 1/4 inch (6.3 mm) per 25 feet (7.6 m).
4. Assembly Deflection: Not greater than the length of the assembly divided by 240.
5. Joint Alignment: Not more than 1/8 inch (3.2 mm).
6. Joint Width: Not more than 3/8 inch (9.5 mm).

C. Predrill fastener holes in ornamentation. Clean fastener holes, removing dirt and oil.

D. Screw fasteners in place by hand. Do not use pneumatic staple guns. Countersink flathead screws.

E. Fasteners as required to comply with dimensional tolerances and not less than 5/16 inch (7.9 mm) from edge and end.

F. Patch fastener holes with bedding compound and fiberglass tape applied flush with finish face. Sand patch smooth and level.

G. Attach pieces at joints with adhesive, and band or brace together until adhesive is cured. Cure adhesive according to manufacturer's printed instructions.

H. Joint Finishing: Comply with ASTM C 840. Provide smooth and contiguous surface.

END OF SECTION 092800

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Cement board.
3. Sound-attenuation blankets

B. Related Requirements:
1. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For the following products:
1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.3 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Install mockups for the following:
   a. Each level of gypsum board finish indicated for use in exposed locations.
2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. CertainTeed Corp.
   2. Georgia-Pacific Gypsum LLC.
   3. Lafarge North America Inc.
   4. National Gypsum Company.
   5. USG Corporation.

B. Gypsum Board, Regular Type: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch.
   2. Where drawings indicate regular type 5/8 inch at partitions, provide 5/8 inch Type X indicated below.
   3. Long Edges: Tapered.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces, in 5/8 inch thickness unless otherwise indicated, with tapered edges; panels shall be classified as Type X

1. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
2. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. National Gypsum Company; Type XP/PR
   b. United States Gypsum Co.; Mold Tough

E. Abuse-Resistant Gypsum Board: ASTM C 1629/C 1629M.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
4. Performance Data:
   a. Surface Abrasion: ASTM C1629. Classification Level 2
   b. Surface Indentation: ASTM C1629. Classification Level 1
   c. Soft-body Impact Test: ASTM C1629. Classification Level 1
5. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. Protecta AR 100 Type X with Mold Defense; Lafarge North America Inc.
   b. ProRoc Gypsum Board Panels; Certainteed, Division of BPB.

2.4 SPECIALTY GYPSUM BOARD

A. Gypsum Board, Type C: ASTM C 1396/C 1396M. Manufactured to have increased fire-resistive capability.
1. Products: Subject to compliance with requirements, provide one of the following or equal:
   a. CertainTeed Corp.; ProRoc Type C.
   b. Lafarge North America Inc.; Firecheck Type C.
   c. National Gypsum Company; Gold Bond Fire-Shield C.
   d. USG Corporation; Firecode C Core.
2. Thickness: 5/8 inch, unless otherwise indicated.
3. Long Edges: Tapered.
4. Provide where required by UL Design or NER 258.

2.5 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. CertainTeed Corp.; FiberCement BackerBoard.
   b. Custom Building Products; Wonderboard.

c. James Hardie Building Products, Inc.; Hardiebacker 500.
d. National Gypsum Company, Permabase Cement Board.
e. USG Corporation; DUROCK Cement Board.

2. Thickness: 1/2 inch or 5/8 inch as indicated.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.6 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
1. Material: Galvanized-coated steel sheet or rolled zinc
2. Shapes:
a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. Expansion (control) joint.
f. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Fry Reglet Corp.
b. Gordon, Inc.
c. Pittcon Industries.
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
3. Finish:
a. Curved Drywall Trim: Corrosion-resistant primer compatible with joint compound and finish materials specified.

4. Basis of Design Products:
a. Curved Drywall Trim: Provide Contura curved drywall trim by Gordon Inc. for locations indicated on the Drawings, in sizes required.

2.7 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joints, beveled panel edges, and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use factory mixed drying-type, all-purpose compound.
   a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use factory mixed drying-type, all-purpose compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

D. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.8 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
   2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
   1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
   1. Fire-Resistance-Rated Assemblies: Provide mineral-fiber SAFB where required by the UL assembly.
   2. Basis of Design Product: Provide Thermafiber SAFB by Owens Corning, or one of the following:
      a. MinWool® Sound Attenuation Fire Batt (SAFB) by Johns Manville.
      b. Rockwool AFB by Rockwool

E. Acoustical Joint Sealant: As specified in Section 079200 “Joint Sealants”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

1. Refer to Section 079200 for additional requirements.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Type X: Vertical surfaces unless otherwise indicated.
   2. Regular Type: Ceiling surfaces.
   3. Abuse-Resistant Type: As indicated on Drawings.
   4. Moisture- and Mold-Resistant Type: As indicated on Drawings.
   5. Type C: Where required for specific fire-resistance-rated assembly indicated.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
   3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
   1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
   2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
   3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

A. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 APPLYING TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at showers, tubs, and where indicated.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.
   1. Install control joints on 30 foot maximum centers, for all partitions, at locations indicated, and as detailed. Align control joints with door frames wherever possible, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
   2. Install control joints at 50 foot maximum centers, with areas not to exceed 2,500 sq. ft. for all ceiling areas, at locations indicated, and as detailed.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners unless otherwise indicated.
   2. Bullnose Bead: Use where indicated.
   3. LC-Bead: Use at exposed panel edges.
   4. L-Bead: Use where indicated.
   5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints**,** rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for tile.
   3. Level 4: At all panel surfaces that will be exposed to view unless otherwise indicated.
   4. Level 5: Provide Level 5 finish at all areas where wall washed lighting is indicated and at surfaces scheduled to receive gloss paint or wallcoverings, and elsewhere specifically indicated on Drawings and schedules.

E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 IDENTIFICATION

A. Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:
   1. Be located in accessible concealed floor, floor-ceiling or attic spaces.
   2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition.
   3. Include lettering not less than 0.5 inch (12.7 mm)) in height, incorporating the followings wording: “FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS,” or other wording to reflect the wall type as indicated on the Code Summary Drawings.

3.8 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093100 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Porcelain tile
2. Ceramic tile
3. Ceramic mosaic tile.
4. Porcelain mosaic tile
5. Quarry tile
6. Trim and edge accessories.
7. Waterproof membrane for tile installations
8. Stone thresholds.

B. Sealing of expansion, contraction, control, and isolation joints in tile surfaces is specified in Division 07 Section "Joint Sealant."

1.2 ACTION SUBMITTALS

A. Product data for each type of product specified.

B. Samples of each color of tile, marble threshold, or accessory to be provided, for verification purposes.

C. Samples of grout demonstrating full range of colors available, for initial selection purposes.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, plus other information specified.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Single-Source Responsibility for Setting and Grouting Materials: Obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

D. Unit Mock-up: Provide mock-up on a board min. 2' x 2' in size, one for each different tile and grout color to be provided in the work; for final approval of grout color before ordering grout.

E. In-Place Mock-up: Prepare mock-ups of types indicated below following requirements of this section. Reprepare mock-ups as many times as required by Architect until satisfactory result is obtained, as judged solely by Architect. Obtain Architect's approval of visual qualities before proceeding with work. Protect approved mock-ups until all work has been completed. Approved mock-ups will represent the minimum standard of acceptability for each portion of the work.

1. Provide in-place sample minimum 5' x 5' of each type of decorative wall and floor tile layout in location directed by Architect.
2. Provide mock-up of mosaic tile installed on one GFRG column as specified in Section 092800.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturers: The design for each tile type and other material specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the following manufacturers:

1. Tile:
   a. American Olean; Div. of Dal-Tile International Corp
   b. Creative Materials Corp.
   c. Crossville Inc
   d. Daltile; Div. of Dal-Tile International Inc.
   e. Garden State Tile
   f. Olympia Tile
   g. Florida Tile Industries, Inc.
   h. Summitville Tiles, Inc.
   i. United States Ceramic Tile Company
   j. Nemo Tile
   k. Wayne Tile

2. Mortars and Grouts:
   a. Bostik Construction Products Div. (Hydroment)
   b. Laticrete International Inc.
   c. Mapei Corp.
   d. TEC Specialty Construction Brands Inc.

3. Waterproofing Membranes: The Noble Co.
4. Termination, Trim and Transition Strips: Schluter

2.2 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.

   1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

   1. Match color, texture, and pattern indicated by reference to manufacturer's standard designations for these characteristics.
   2. Provide tile trim and accessories that match color and finish of adjoining flat tile.

D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.

E. Large Format Tiles: Large format tiles are defined to be tiles with any one single side larger than 15".

2.3 TILE PRODUCTS

A. Porcelain Floor Tile (PT1): Provide flat tile complying with the following requirements:

1. Module Size: 12" x 24"
2. Thickness: 8 mm
3. Finish: Matte
4. Color: Grey
5. Edges: Rectified
6. Basis of Design Product: Net Zero by MILEstone Tile or equal.
7. Pattern: As indicated on Drawings.
8. Grout Color: As selected by Architect

B. Porcelain Wall Tile (PT2A and PT3A): Provide profiled tile complying with the following requirements:

1. Module Size: 3" x 24"
2. Thickness: 8 mm
3. Finish: Glossy
4. Color:
   a. PT2A: Navy
   b. PT3A:Olive
5. Edges: Non-rectified
6. Basis of Design Product: Lark by Garden State Tile or equal.
7. Pattern: As indicated on Drawings.
8. Grout Color: As selected by Architect

C. Ceramic Wall Tile (CT1): Provide flat tile complying with the following requirements:

1. Module Size: 4" x 16"
2. Thickness: 3/8"
3. Finish: Glossy
4. Color: Calm 0035
5. Basis of Design Product: Color Story Wall by American Olean or equal.
6. Pattern: As indicated on Drawings.
7. Grout Color: As selected by Architect.

D. Porcelain Mosaic Wall Tile (CT2): Provide flat tile complying with the following requirements:

1. Module Size: 1 by 6 inches
2. Sheet Size: 11.4" x 12"
3. Nominal Thickness: 5.5 mm.
4. Mount Type: Mesh mounted.
5. Finish: Glossy
6. Color: Dover White
7. Basis of Design Product: Stick by Garden State Tile or equal..

8. Pattern: As indicated on Drawings.
9. Grout Color: As selected by Architect.

E. Ceramic Mosaic Wall Tile (CT4A, CT4B, CT4C, and CT4D): Provide flat tile complying with the following requirements:

1. Module Size: 2" x 3"
2. Sheet Size: 10.5" x 13"
3. Thickness: 1/4"
4. Mount Type: Dot mounted
5. Shape: Chevron
6. Finish: Semi-gloss
7. Colors:
    a. CT4A: Arctic White 0190
    b. CT4B: Desert Gray X114
    c. CT4C: Waterfall 0169
    d. CT4D: Galaxy 1469
8. Basis of Design Product: Color Wheel Retro by DalTile or equal.
9. Pattern: As indicated on Drawings.
10. Grout Color: As selected by Architect.

F. Ceramic Wall Tile (CT5): Provide flat tile complying with the following requirements:

1. Module Size: 4" x 12"
2. Thickness: 5/16"
3. Finish: Semi-gloss
4. Color: Arctic White 0190
5. Basis of Design Product: Color Wheel Linear by DalTile or equal.
6. Pattern: As indicated on Drawings.
7. Grout Color: As selected by Architect

G. Quarry Tile Floor (QT): Provide flat tile complying with the followin requirements:

1. Module Size: 6" x 6"
2. Thickness: 1/2"
3. Finish/Surface: Matte finish
4. Surface: Non-abrasive
5. Color: Gray Q22
6. Basis of Design Product: Questep by American Olean or equal.
7. Pattern: As indicated on Drawings.
8. Grout Color: As selected by Architect

H. Trim Units: Provide tile trim units with inside and outside corners and to comply with following requirements:

1. Quarry Tile Base (QTB): 5" x 6" round top cove base in Gray Q22
    a. Basis of Design Product: Questep by American Olean or equal.

2. Porcelain Tile Base (PTB): 12" x 12" x 7.7mm thick cut in half to produce 6" x 12" wall base in Green 12 color, Natural finish, with rectified edges,
   a. Basis of Design Product: Bellissimo by Creative Materials Corp or equal.

3. Porcelain Tile Base: (PT1B): Cove base as follows:
   a. Module Size: 6" x 12"
   b. Thickness: 8 mm
   c. Finish: Matte
   d. Color: Grey
   e. Edges: Rectified
   f. Basis of Design Product: Net Zero by MILEstone Tile or equal.
   g. Pattern: As indicated on Drawings.
   h. Grout Color: As selected by Architect

4. Porcelain Tile Base (PT2B and PT3B): Provide profiled tile complying with the following requirements:
   a. Module Size: 6" x 24"
   b. Thickness: 8 mm
   c. Finish: Glossy
   d. Color:
      1) PT2B: Navy
      2) PT3B:Olive

   e. Edges: Non-rectified
   f. Basis of Design Product: Lark by Garden State Tile or equal.
   g. Pattern: As indicated on Drawings.
   h. Grout Color: As selected by Architect

2.4 STONE THRESHOLDS

A. General: Provide stone that is uniform in color and finish, fabricated to sizes and profiles indicated or required to provide transition between tile surfaces and adjoining finished floor surfaces.

1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch (12.7 mm) or less, and finish bevel to match face of threshold.

B. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and for abrasion resistance where exposed to foot traffic, a minimum hardness of 10 per ASTM C 241.

1. Provide white marble thresholds.

2.5 WATERPROOFING/CRACK ISOLATION FOR TILE INSTALLATIONS

A. General: Provide products that comply with ANSI A118.10 and the descriptions in this Article.

B. Polyethylene-Sheet Waterproofing: Manufacturer's standard proprietary product consisting of composite sheets, 60 inches (1524 mm) wide by a nominal thickness of 0.030-inch (0.76 mm), composed of an inner layer of nonplasticized, chlorinated polyethylene sheet faced on both sides with laminated, high-strength, nonwoven polyester material, designed for embedding in latex-portland cement mortar and as the substrate for latex-portland cement mortar setting bed. Provide at all locations for thin-setting.

1. Products: Provide Nobleseal TS manufactured by the Noble Company, or approved equal.
2. Location: Use at all thin set tile floors in bathrooms.

2.6 SETTING MATERIALS

A. Medium-Bed, Latex-Portland Cement Mortar. Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of up to 3/4 inch. Provide one of the following, or approved equal:

1. MegaLite® Ultimate Crack Prevention Large Format Tile Mortar by Custom Building Products.
2. 4-XLT by Laticrete.
3. Large Tile and Stone Mortar by Mapei

B. Latex-Portland Cement Mortar: Two component mortar system, comply with ANSI A118.4. Provide one of the following, or approved equal:

1. Laticrete 317 with Laticrete 333 additive; Laticrete International, Inc.
2. Kerabond with Keralastic; Mapei Corp.
3. Or equivalent.

2.7 GROUTING MATERIALS

A. Water-Cleanable Epoxy Grout for General Use: ANSI A118.3. with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24). Grout shall be stain resistant, color fast, mold and mildew inhibiting, non-sag, suitable for joints 1/16" to ½" and sanded type suitable for installing with glazed tiles.

1. Basis of Design Product: Laticrete “Spectralock Pro Epoxy Grout” or equal.
2. Colors: As selected by Architect.

B. Chemical-Resistant Epoxy Grout for Unglazed Quarry Tile: Water-cleanable, 100%-solids epoxy grout with high chemical and stain resistance, formulated for use in commercial kitchens, meat packing houses, and any commercial and institutional floors that require daily cleaning with enzymatic cleaners. .Product shall meet or exceed ANSI A118.3 requirements and ANSI A118.5 physical testing requirements.

1. Basis of Design Product: Mapei “Kerapoxy IEG CQ” or equal by Laticrete or Custom Building Products.
2. Colors: As selected by Architect

2.8 MISCELLANEOUS MATERIALS

A. Metal Edge Strips: Zinc alloy or stainless steel terrazzo strips, 1/8-inch wide at top edge with integral provision for anchorage to mortar bed or substrate unless otherwise indicated.

B. Notched Trowel: Use type recommended by tile manufacturer for setting large-format tiles, for setting bed thickness utilized.

C. Termination, Trim and Transition Strips: Provide Schluter units in Type 304 stainless steel as scheduled below, or indicated on Drawings.

1. MT3: Provide Schluter Jolly where scheduled on the Drawings.

D. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by tile manufacturer for applications indicated.

E. Grout Release: Product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

1. Mapei “UltraCare Grout Release”.
2. Miracle Sealants Co. “511 Impregnator”

F. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

G. Grout Sealers: Water-based sealer for tile for protection from stains, as follows:

1. Mapei “UltraCare Grout Sealer”.
2. Miracle Sealants Co. “511 Impregnator”

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
3. Verify that subfloors are free of cracks, ridges, depressions, scale, and foreign deposits of any kind.
4. Perform moisture test at rate of one per 2,000 sq.ft.
5. Verify that concrete substrates are within the flatness tolerances required for setting large format tiles.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with manufacturer's installation specifications to prepare substrates indicated to receive tile.

B. Use trowelable leveling and patching compounds per manufacturer's directions to fill cracks, holes, and depressions in substrates and to patch and level floors as required to provide suitable substrate for tile application.

C. Remove coatings, including curing compounds, and other substances that could interfere with adhesion of tile by using a grinder, sander, or polishing machine with a heavy-duty wire brush.

D. Broom or vacuum clean substrates to be covered by tiles immediately before tile installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

E. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

F. Transitions: Transitions of floor surfaces must be level. Use transition and edge pieces as required to obtain level abutting surfaces, meeting ADA requirements.

G. For large format tiles thin-set with medium bed mortar, provide the following surface preparation:

1. Level substrates to 1/8-inch variance in 10 feet, with no more than 1/16 inch variation in 24 inches by one of the following methods:

a. Provide self-leveling hydraulic cement underlayment throughout project where new floor tile is installed.
b. Grind concrete floor substrates and patch with trowelable leveling and patching compound to achieve indicated flatness.
c. Skim coat and patch wall surfaces using manufacturer approved trowel-applied cement-based compound to bring surface into acceptable tolerances.

2. There shall be no abrupt irregularities greater than 1/32"

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCNA Installation Guidelines: TCNA "Handbook for Ceramic Tile Installation"; comply with TCNA installation methods indicated.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.

1. Cut and grind tile edges where they abut curved surfaces to produce a close and uniform abutting joint.

E. Jointing Pattern: Lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths unless otherwise shown.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work

F. Tile Patterns: Comply with pattern indicated on drawings.

G. Expansion Joints: Provide expansion joints, control joints and pressure relieving joints of widths and at locations as per TCNA Handbook Construction #EJ171. Do not saw cut joints after installation of tiles.

1. Sealing of joints is included in Division 07 Section "Joint Sealers."

H. Apply grout release to tile surfaces prior to grouting. Prepare a small mock-up area of grout release application for Architect's approval before proceeding with application of grout release to installed tile surfaces.

I. Grout tile to comply with ANSI A108.10.

3.4 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with waterproofing manufacturer's written instructions to produce a waterproof membrane of uniform thickness bonded securely to substrate.

B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR INSTALLATION METHODS

A. Floor Tile: Install tile to comply with requirements indicated below for setting bed methods, TCNA installation methods related to types of subfloor construction, and grout types:

1. Concrete subfloor, TCNA F205, modified to comply with tile manufacturer's installation instructions, and as follows:
   a. Bond Coat for Tile: Medium-Bed, Latex-Portland Cement Mortar, ANSI A108.5 over subfloor.
   b. Grout: Epoxy grout specified for general use.
   c. Setting bed thickness shall be as required to produce finished floor surface at correct level for project.
   d. Provide at non-wet floors (lobby, vestibule).

2. Concrete subfloor with waterproofing/crack suppression membrane, TCNA F205 modified to comply with membrane manufacturer's installation instructions, details on drawings and as follows:
   a. Bond Coat for Membrane:
      1) Large Format Tile: Medium-Bed, Latex-Portland Cement Mortar, ANSI A108.5 over subfloor.
      2) Other Tile: Latex-Portland Cement Mortar, ANSI A108.5 over subfloor

   b. Sheet membrane over bond coat, extend up walls 4 inches
   c. Bond Coat for Tile:
      1) Large Format Tile: Medium-Bed, Latex-Portland Cement Mortar–ANSI A108.5 over membrane
      2) Other Tile: Latex-Portland Cement Mortar, ANSI A108.5 over membrane

   d. For large format tile, setting bed thickness shall be as required to produce finished floor surface at correct level for project.
   e. Grout: Epoxy grout.
   f. Provide at wet area floors (toilet room and locker room).

3. Quarry Tile, Concrete subfloor, TCNA F113 (thin set application), and as follows:
   a. Bond Coat for Tile: Latex-portland cement mortar, ANSI A108.5 over subfloor.
   b. Apply grout release prior to grouting.
   c. Grout: Epoxy grout specified for quarry tile.

B. Joint Widths:

1. Porcelain Tile: 3/32".
2. Quarry Tile: 3/8"

C. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

D. Transition Strips: Install at all edges where new tile meets existing flooring to ensure a smooth transition meeting ADA requirements.

E. Stone Thresholds: Install stone thresholds at tile transitions at restrooms. Allow for bevel/chamfer as required. Set in same type of setting bed as abutting field tile unless otherwise indicated. Sealant is specified in Section 079200.

3.6 WALL INSTALLATION METHODS

A. Wall Tile: Install tile to comply with requirements indicated below for setting-bed methods, TCNA installation methods related to subsurface wall conditions, and grout types:

1. Gypsum Board and Cement Board - TCNA W243, and as follows:
   a. Bond Coat for Large Format Tile: Medium-Bed, Latex-Portland Cement Mortar, ANSI A108.5 over concrete masonry units.
   b. Bond Coat for Other Tile: Latex-portland cement mortar, ANSI A108.5, over concrete masonry units.
   c. Grout: Epoxy.

2. Concrete Masonry Units - TCNA W202, and as follows:

   a. Bond Coat for Large Format Tile: Medium-Bed, Latex-Portland Cement Mortar, ANSI A108.5 over concrete masonry units.
   b. Bond Coat for Other Tile: Latex-portland cement mortar, ANSI A108.5, over concrete masonry units.
   c. Grout: Epoxy

B. Joint Widths: 1/16".

3.7 CLEANING AND PROTECTION

A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.

2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.

1. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 093100

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes ceilings consisting of acoustical panels and exposed suspension systems.

B. Related Sections include the following:

1. Acoustical sealants are specified in Division 07 Section “Joint Sealants”

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product specified

B. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension members.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
4. Minimum Drawing Scale: 1:100

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on samples of size indicated below.

1. 6-inch- (150-mm-) square samples of each acoustical panel type, pattern, and color.
2. Set of 12-inch- (300-mm-) long samples of exposed suspension system members, including moldings, for each color and system type required.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Indicate compliance of acoustical panel ceilings and components with requirements based on comprehensive testing of current products.

B. Research/Evaluation Reports: Evidence of acoustical panel ceiling's and components' compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

C. Maintenance Data: For finishes to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed acoustical panel ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer..

C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
   a. Smoke-Developed Index: 450 or less

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges, soiling panels or damaging units in any way.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Components: 2% of each type of panel installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Products: Subject to compliance with requirements, provide specified products by Armstrong World Industries or equivalent products by one of the following:

1. CertainTeed
2. USG Interiors

2.2 ACOUSTICAL PANELS

A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring Noise Reduction Coefficient: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface per ASTM E 795.

B. Acoustical Panels for Acoustical Panel Ceiling ACT 1: Provide panels complying with the following:

1. ASTM E1264 Classification: Type A, Form A2.2, Pattern E.
2. Color: White.
3. Noise Reduction Coefficient: 0.75
4. Ceiling Attenuation Class: 35
5. Light Reflectance Coefficient: Not less than LR 0.88.
6. Fire Rating: Class A
7. Sag Resistance Treatment: Armstrong HumiGuard Plus
8. Anti-Mold and Mildew Treatment: BioBlock+
9. VOC: GREENGUARD Gold Certified low VOC emissions
10. Warranty: 30 year
11. Edge Detail: Beveled tegular.
12. Thickness: 3/4 inch.
13. Size: 24 by 24 inches.
14. Basis of Design Product: Armstrong Ultima Tegular #1911HRC
15. Location: General.

C. Acoustical Panels for Acoustical Panel Ceiling ACT2: Where this designation is indicated, provide panels complying with the following:

1. ASTM E1264 Classification: Type A, Form A2.2, Pattern E.
2. Color: White.
3. Noise Reduction Coefficient: 0.70
4. Ceiling Attenuation Class: 38
5. Light Reflectance Coefficient: Not less than LR 0.86.
6. Fire Rating: Class A
7. Sag Resistance Treatment: Armstrong HumiGuard Plus

8. Anti-Mold and Mildew Treatment: BioBlock+
9. VOC: GREENGUARD Gold Certified low VOC emissions
10. Warranty: 30 year
11. Edge Detail: Beveled tegular.
12. Thickness: 3/4 inch.
13. Size: 24 by 24 inches.
14. Basis of Design Product: Armstrong Ultima Health Zone Tegular #1937
15. Location: Kitchen.

2.3 METAL SUSPENSION SYSTEMS

A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.

1. Provide fire-resistance rated metal suspension system where indicated

B. Suspension System for Acoustical Panel Ceilings ACT-1 and ACT2: Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 (Z120) coating designation, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges; other characteristics as follows:

1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
3. Face Design: Flush face.
4. Cap Material:
   a. ACT1: Steel sheet.
   b. ACT2: Aluminum sheet.
5. Cap Finish: Manufacturer's standard factory-applied painted finish in white.
6. Basis of Design Product: Armstrong Prelude XL.

C. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated.

1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

E. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material, finish and color as that used for exposed flanges of suspension system runners.

1. Extruded Aluminum Perimeter Trim Provide Armstrong Axiom Edge trim or other trim as scheduled.

2.4 ACOUSTICAL SEALANT

A. Refer to Division 07 Section “Joint Sealants”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical panel ceilings.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.

B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Do not attach hangers to steel deck tabs.
6. Do not attach hangers to steel roof deck. Attach hangers to structural members.
7. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches (200 mm) from ends of each member.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m). Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical panels as indicated on reflected ceiling plans.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components

that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 095119 - ACOUSTIC BOARD CEILING PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes Tectum acoustical board panels (ACT3) installed as follows:

1. Direct mounted to ceiling surfaces.

B. Related Sections include the following:

1. Acoustical sealants are specified in Division 07 Section “Joint Sealants”

1.2 ACTION SUBMITTALS

A. Product data for each type of product specified. Include data on physical characteristics, material densities, fastening and attachment methods, acoustical performance data, and flame resistance characteristics.

B. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension members.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
4. Minimum Drawing Scale: 1:100

C. Samples for Verification: For the following products:

1. Panel: 12 inch by 12 inch sample of specified product with one edge painted as specified.
2. Mounting Devices: Full-size samples of each type.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates signed by acoustic board manufacturer certifying materials furnished comply with specified requirements.

B. Certified test reports showing compliance with requirements for fire performance characteristics and physical properties.

C. Maintenance Data: For finishes to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide acoustic boards with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustic boards with appropriate markings of applicable testing and inspecting organization.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

B. Installer Qualifications: Arrange for installation of acoustic boards by a firm that can demonstrate successful experience in installing similar in type and quality to those required for this Project.

C. Source Limitations: Obtain each type of acoustical board and supporting suspension system through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect units during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.6 PROJECT CONDITIONS

A. Maintain a constant temperature not less than 70°F in installation areas for at least ten (10) days before and ten (10) days after installation.

B. Field Measurements: Where units are indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

1.7 COORDINATION

A. Coordinate layout and installation of acoustical board panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies..

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Basis-of-Design Manufacturer: Provide specified acoustic board and suspension systems manufactured by Armstrong World Industries or one of the following:

1. ASI Architectural; Strandtec.
2. G&S Acoustic; Melody.

2.2 ACOUSTIC BOARDS:

A. Acoustic Board Ceiling Panels ACT3 : Aspen wood fibers bonded with inorganic hydraulic cement. Product shall comply with the following:

1. Sizes: As indicated on Drawings.
2. Thickness: 2".
3. Surface Burning/Flame Spread Characteristics: Class A.
4. Sag Resistance Treatment: Armstrong HumiGuard Plus
5. Anti-Mold and Mildew Treatment: BioBlock
6. Edges: Long edges beveled, square ends.
7. NRC: .75
8. Color: White, for field painting.
9. Mounting Method: For direct application to ceiling surfaces using 1" furring channels (similar to D20 mounting).
10. Warranty: 30 years.
11. Basis of Design Product: "Tectum Direct-Attach High NRC Ceiling Panels” by Armstrong World Industries, or approved equivalent

2.3 MOUNTING SYSTEMS AND MATERIALS

A. Concealed Suspension Systems for Tectum Panels: Armstrong World Industries, Inc.; Drywall Grid Systems; refer to Division 09 Section “Non-Structural Metal Framing” for specifications. Provide all required hangars and all other components as specified in this section.

B. Fasteners: Provided by or approved by manufacturer for installation conditions indicated.

C. Adhesive: Manufacturer's standard low odor, VOC compliant, non-flammable latex based adhesive recommended for use and substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which acoustical board ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical panel ceilings.

B. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 PREPARATION

A. For direct application, clean substrates of projections and substances detrimental to application of panels. Follow manufacturer's printed instructions for surface preparation.

B. Acclimate acoustic boards to room temperature for 48 hours prior to installation.

C. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.

D. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

E. Field paint panel faces and edges, prior to installation.

1. Field painting is specified in Division 09 Section “Painting”.

3.3 INSTALLATION

A. Do not use materials that are unsound, warped, bowed or twisted.

B. Install acoustic boards plumb, level, true, and aligned with adjacent materials.

1. Scribe and cut acoustic boards to fit adjoining work.
2. Install to tolerance of 1/32 inch in 8 feet for plumb and level.
3. Coordinate with materials and systems that may be in or adjacent to acoustic boards. Provide cutouts for mechanical and electrical items that penetrate.
4. Install in accordance with approved shop drawings.

C. Surface Application of Tectum Panels: Plan acoustic board layout, balancing acoustic board sizes at corners. Mechanically fasten and adhere acoustic boards to substrate in accordance with manufacturer's written instructions. Stagger joints between acoustic boards and substrate material.

D. Concealed Suspension System Mounting of Tectum Panels: Install concealed drywall suspension system as specified in Division 09 Section “Non-Structural Metal Framing”. Mechanically fasten acoustic boards to framing system in accordance with manufacturer's written instructions.

E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels. Comply with manufacturer's written installation instructions.

3.4 ADJUSTING AND CLEANING

A. Repair damaged or defective acoustic boards where possible to eliminate functional or visual defects. Where not possible to repair, replace acoustic boards.

B. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.

C. Use cleaning methods recommended by the acoustic board manufacturer.

D. Replace acoustic boards that cannot be cleaned.

3.5 PROTECTION

A. Provide final protection and maintain conditions that ensure acoustic boards are without damage or deterioration at time of Substantial Completion.

END OF SECTION 095119

SECTION 096400 - WOOD FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Patching and repair of existing solid wood strip flooring.
2. New solid wood strip flooring to match existing.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show installation details including location and layout of each type of wood flooring and accessory.

C. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches (300 mm) long and of same thickness and material indicated for the Work. Include sample sets showing the full range of normal color and texture variations expected.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed wood flooring similar in material, design, and extent to that indicated for this Project and whose work has resulted in wood flooring installations with a record of successful in-service performance.

B. Source Limitations: Obtain each type of material and product from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet-work is complete and dry.

B. Store wood flooring materials in a dry, warm, well-ventilated, weathertight location.

C. Move wood flooring into spaces where it will be installed, at least seven days before installation.

1.5 PROJECT CONDITIONS

A. Conditioning: Maintain relative humidity planned for building occupants and an ambient temperature between 65 and 75 deg F (18 and 24 deg C) in spaces to receive wood

flooring for at least seven days before installation, during installation, and for at least seven days after installation. After post-installation period, maintain relative humidity and ambient temperature planned for building occupants.

1. For unfinished products, open sealed packages to allow wood flooring to acclimatize.
2. Do not install flooring until it adjusts to the relative humidity of and is at the same temperature as the space where it is to be installed.
3. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by flooring and finish manufacturers.

PART 2 - PRODUCTS

2.1 SOLID-WOOD STRIP AND PLANK FLOORING

A. Strip Flooring: Use salvaged wood floorin to greatest extent possible. If new flooring is requires, match existing.

2.2 FINISHING MATERIALS

A. Refer to Section 096460 for finishing materials. Finish of new wood flooring, repaired existing flooring and refinished existing flooring shall match.

2.3 ACCESSORY MATERIALS

A. Felt Underlayment: ASTM D 226, Type I, No. 15, asphalt-saturated felt.

B. Fasteners: As recommended by manufacturer, but not less than that recommended in NOFMA's "Installing Hardwood Flooring."

C. Wood Trim: Provide replacement wood trim including base shoe molding, reducer strips, thresholds and wall base as required. Refer to Section 064020 for specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of wood flooring. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with flooring manufacturer's written instructions, but not less than recommendations in NOFMA's "Installing Hardwood Flooring," as applicable to flooring type.

B. Pattern: Lay wood flooring in pattern to match existing.

C. Expansion Space: Provide expansion space at walls and other obstructions and terminations of flooring to match existing conditions.

D. Felt Underlayment: Where strip or plank flooring is nailed to solid-wood subfloor, install flooring over a layer of asphalt-saturated felt.

E. Solid-Wood Strip and Plank Flooring: Blind nail or staple flooring to substrate according to NOFMA's written recommendations.

F. Accessories: Nail baseboard to wall and nail shoe molding or other trim to baseboard; do not nail to flooring.

3.3 SANDING AND FINISHING

A. Machine-sand flooring to remove offsets, ridges, cups, and sanding-machine marks that would be noticeable after finishing. Vacuum and tack with a clean cloth immediately before applying finish.

B. Apply filler according to manufacturer's written instructions.

1. Fill open-grained hardwood.
2. Fill and repair seams and defects.

C. Apply stain to match approved Sample if required.

D. Apply floor sealer according to finish manufacturer's written instructions.

E. Apply floor finish according to finish manufacturer's written instructions. Apply in number of coats recommended by finish manufacturer for application indicated, but not less than three.

F. For water-based finishes, use finishing methods recommended by finish manufacturer to minimize grain raise.

3.4 PROTECTION

A. Cover installed wood flooring to protect it from damage or deterioration, before and after finishing, during remainder of construction period. Use heavy kraft-paper or other suitable covering. Do not use plastic sheet or film that could cause condensation.

1. Do not cover site-finished floors with kraft paper, or any other material, until finish reaches full cure, but not less than seven days after applying last coat.

END OF SECTION 096400

SECTION 096460 - WOOD FLOORING REFINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Refinishing existing wood flooring.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: Manufacturer's color charts showing colors and glosses available for the following:

1. Stain.

C. Samples for Verification: For wood flooring and accessories, with stain color and finish required, approximately 12 inches long and of same thickness and material indicated for the Work. Include sample sets showing the full range of normal color and texture variations expected.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed wood flooring refinishing work similar in material, design, and extent to that indicated for this Project and whose work has resulted in wood flooring refinishing installations with a record of successful in-service performance.

B. Source Limitations: Obtain each type of material and product from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver refinishing products in unopened containers.

B. Store wood flooring finishing materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application

1.5 PROJECT CONDITIONS

A. Perform refinishing of wood floors after other finishing operations, including painting, have been completed.

B. Permanent heat, light and ventilation shall be installed and operating before, during and after the resurfacing is complete; maintain a temperature range of 55 degrees to 75 degrees and a relative humidity range compatible with expected environmental conditions when the facility is occupied.

C. Close spaces to traffic during flooring refinishing and for time period after refinishing recommended in writing by flooring finish manufacturers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide finishing products by one of the following:

1. Buckeye International, Inc
2. BonaKemi USA, Inc.
3. Dura Seal Division; Sherwin Williams Co.
4. Hillyard Industries, Inc.
5. Sika Corp.

2.2 FINISHING MATERIALS

A. Urethane Finish System: Complete system of compatible components that is recommended by finish manufacturer for application indicated.

1. Type: Solvent based oil-modified urethane.
2. VOC Content: Less than 350 g/L. when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Solids Content: Minimum 50%
4. Floor Sealer: Pliable, penetrating type.
   a. Basis of Design Product: 350 Wood Seal by Hillyard Industries, Inc. or equal.

5. Finish Coats: Formulated for multicoat application on wood athletic flooring.
   a. Basis of Design Product: 350 Gym Finish by Hillyard Industries, Inc. or equal.

B. Wood Filler: Formulated to fill and repair seams, defects, and open-grain hardwood floors; compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved samples, provide pigmented filler.

2.3 ACCESSORY MATERIALS

A. Sandpaper: Sandpaper should consist of three grits.

1. First cut (Coarse grit)
2. Second Cut (Medium grit)
3. Third Cut (Fine grit)
    a. Comply with finish manufacturers final cut recommendation to ensure proper adhesion of the finish.

B. Finish application tools shall be approved by the finish manufacturer.

C. Wood Trim: Re-use existing trim, or if not available, match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements, and other conditions affecting performance of wood flooring refinishing. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Carefully remove and salvage base shoe molding around entire perimeter of all rooms or areas where existing wood flooring is scheduled to be refinished.

B. Clean all existing wood flooring with recommended cleaner and water, using a soft bristle brush, do not flood floor; allow to dry.

3.3 REFINISHING EXISTING FLOORING

A. Schedule floor refinishing to be completed just before final inspection, Project acceptance and Substantial Completion.

B. Machine-sand existing flooring to remove existing finish, offsets and nonlevel conditions, ridges, cups, and sanding machine marks that would be noticeable after finishing. Use coarse, medium and fine grades of sandpaper, followed by screening with 120 grit screen on a heavy-duty buffing machine. Vacuum and tack clean the entire floor between each cut, and immediately apply finish. Do not permit traffic on floor after sanding and until finish is completed. Cover sanded floor with building paper to provide access for application of first finish coats.

1. Use an "open face" sanding paper for the first sanding to remove the finish.

C. Finish: Apply floor finish according to manufacturer's instructions, including a 2 coats of penetrating sealer of type recommended. Apply a minimum of 3 finish coats and as many additional coats as needed to build a minimum dry film thickness of 3 mils. Follow manufacturer's recommendations for drying time between coats. Screen lightly with 150 grit screen on a heavy-duty buffing machine to remove slight grain raise after sealer coat,

and vacuum and tack as recommended by floor finish manufacturer. Screen lightly, vacuum and tack between finish coats as recommended by floor finish manufacturer..

D. Install salvaged base trim and other cover trim at walls to cover expansion spaces at edges and interruptions of flooring.

1. Unless fully concealed by trim, fill expansion space with flush cork expansion strip
2. Nail baseboard to wall and nail shoe molding or other trim to baseboard; do not nail to flooring.

3.4 PROTECTION

A. Cover refinished wood flooring to protect it from damage or deterioration, before and after finishing, during remainder of construction period. Use heavy kraft-paper or other suitable covering. Do not use plastic sheet or film that could cause condensation.

1. Do not cover site-finished floors with kraft paper, or any other material, until finish reaches full cure, but not less than seven days after applying last coat.

B. Prohibit traffic on finished floor for a minimum of 10 days. Protect completed wood flooring during remainder of construction period so that finish is allowed to properly cure and flooring and finish will be without damage or deterioration at time of acceptance.

C. Instruct Owner's representatives in care and maintenance of flooring.

END OF SECTION 096460

SECTION 096500 - RESILIENT FLOORING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Luxury vinyl tile
2. Vinyl composition tile.
3. Sheet PVC flooring with base
4. Rubber tile.
5. Rubber wall base.
6. Resilient flooring accessories.
7. Resilient stair accessories.

1.2 ACTION SUBMITTALS

A. Product data for each type of product specified.

B. Samples for verification purposes in form of actual flooring or sections of accessories for each color and pattern specified.

1. For heat-welding bead, manufacturer's standard-size samples, but not less than 9 inches (230 mm) long, of each color specified.

C. Shop Drawings: Indicate decorative pattern layout, if any. Show location of seams and edges. Indicate location of columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutout locations.

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance data for resilient flooring and accessories.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an installer who is competent in the technique required by sheet flooring manufacturer for heat-welding and chemically welding seams.

B. Single-Source Responsibility for Floor Tile and Accessories: Obtain each type, color, and pattern of tile and accessory from a single source; all stair accessories shall be from one manufacturer.

C. Single-Source Responsibility for Sheet Flooring and Accessories: Obtain each type, color, and pattern of sheet floor covering specified and all related accessories, including wall base, from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

D. Fire Performance Characteristics: Provide resilient flooring with the following fire performance characteristics as determined by testing products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class 1, per ASTM E 648 or NFPA 253.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient materials on flat surface in dry space protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C).

B. Store rolls of sheet flooring upright.

C. Move floor coverings and installation accessories into spaces where they will be installed at least 48 hours before installation, unless longer conditioning periods are recommended in writing by manufacturer.

1.6 PROJECT CONDITIONS

A. Maintain a minimum temperature of 70 deg F (21 deg C) in spaces to receive resilient flooring for at least 72 hours prior to installation, during installation, and for not less than 72 hours after installation. After this period, maintain a temperature of not less than 55 deg F (13 deg C).

B. Moisture Testing of Concrete Substrates: Perform moisture tests recommended by manufacturer and as follows:

1. Testing Procedures: Perform calcium chloride or moisture meter tests as required by floor topping and resilient tile manufacturers.
   a. Calcium Chloride Testing: Anhydrous calcium chloride test, ASTM F 1869.
   b. Moisture Meter Testing: Relative humidity test using in situ probes, ASTM F 2170.

2. Proceed with installation only after substrates do not exceed maximum moisture-vapor-emission rate or relative humidity level measurement acceptable to flooring material manufacturer.

C. Do not install flooring or accessories until they are at the same temperature as the space where they are to be installed.

D. Close spaces to traffic during flooring installation.

1.7 SEQUENCING AND SCHEDULING

A. Install flooring and accessories after other finishing operations, including painting, have been completed.

1.8 WARRANTY

A. Sheet Flooring: Manufacturer's 10 year warranty against manufacturing defects.

1.9 EXTRA MATERIALS

A. Extra Materials: Furnished from same production run as resilient tile, base and accessories installed. Furnish 5% of each type and color of material provided in the work. Package materials with protective covering and identify with labels describing contents. Deliver extra materials to Owner.

1. Extra materials of sheet floor covering is not required.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

1. Tiles:
   a. Armstrong World Industries
   b. Interface
   c. Mannington
   d. Mohawk Group
   e. Patcraft
   f. Shaw Hard Surface
   g. Tarkett

2. Sheet PVC Flooring and Base: Oscoda Plastics, Inc

3. Base and Other Accessories:
   a. Armstrong
   b. Endura
   c. Roppe
   d. Johnsonite

4. Rubber Stair Treads and Risers:
   a. Endura Large Tile
   b. Nora
   c. Tarkett
   d. Roppe

2.2 PRODUCTS, GENERAL

A. Colors, Textures, and Patterns: Provide tile, sheet goods and accessories in color, texture and pattern to match specified products. Colors and patterns indicated by reference to manufacturer's name and designations are for color and pattern identification only and are not intended to limit selection of other manufacturer's products with similar colors and patterns. If no colors or patterns are indicated, provide color(s) and pattern(s) as selected by Architect from manufacturer’s standards.

B. Resilient flooring and base shall comply with RFCI FloorScore Program.

2.3 RESILIENT TILE FLOORING

A. Luxury Vinyl Tile (LVT1): Luxury vinyl tile complying with ASTM F1700, Class III, Type B and as follows:

1. Basis of Design Product: Interface Natural Woodgrains from Level Set Collection, or equal.
2. Size: 9.845" x 39.38" (25cm x 1m)
3. Wear Layer Thickness: 22 mil
4. Total thickness: 4.5mm
5. Finish: Ceramor
6. Backing: Sound Choice
7. Warranty: 15 years.
8. Color: Cedar A00212
9. Installation: Ashlar.

B. Vinyl Composition Tile (VCT1 through VCT5): ASTM F 1066, Class 2, through-pattern.

1. Thickness: 1/8"
2. Tile Size: 12" x 12"
3. Factory Finish: Fast Start
4. Colors:
    a. VCT1: SC234 Silk
    b. VCT2: SC230 Victoria Blue
    c. VCT3: SC875 Mild Greyed Blue
    d. VCT4: SC866 Little Green Apple
    e. VCT5: SC878 Golden

5. Basis of Design Product: Standard Excelon Crown Texture by Armstrong Flooring AHF, or equal.

2.4 SHEET PVC FLOORING

A. Sheet PVC Flooring (PA1): Recycled PVC with fabric strand reinforcement sheet flooring.

1. Sheet Size: 60" x 96"
2. Sheet Thickness: 1/4"
3. Surface Finish: Matte finish.
4. Color: Cityscape Ultra from Designer Series.

5. Basis of Design Product: Protect-All Specialty Flooring manufactured by Oscoda Plastics, Inc.

2.5 RESILIENT WALL BASE

A. Rubber Wall Base (RB): ASTM F 1861, Type TP, Group 1 (solid), 1/8" thick, smooth surface, and as follows:

1. Style: Straight (toeless) style for all carpeted areas and cove base with toe (set-on type) elsewhere
2. Lengths: Coils in manufacturer's standard length.
3. Height:
   a. RB1: 4"
   b. RB2, RB3, RB4, RB7 and RB8: 6"
4. Inside and Outside Corners: Preformed.
5. Products: Rubber Base by Johnsonite/Tarkett.
6. Colors:
   a. RB1: 29 Moonrock WG
   b. RB2: TH2 Blue Intensity
   c. RB3: TH1 Glenhaven
   d. RB4: 40 Black
   e. RB7: 58 Windsor Blue
   f. RB8: 649 Sweet Basil

B. PVC Wall Base: 6" high matching PVC sheet, Protect-All Cove Base manufactured by Oscoda Plastics, Inc.

2.6 RESILIENT STAIR ACCESSORIES

A. Stair Treads and Risers (STR1): Rubber one-piece tread/riser combination meeting ASTM F-2169,Type TS, Class 2, Group 1 and/or 2, Grade 2 and as follows:

1. Nosing Style: Square, hinged.
2. Thickness: 0.20 inches (5mm)
3. Size: 78.89" x 19.69".
4. Surface Texture: Hammered.
5. Solid Rubber Colored Insert Strip: 2" wide, in contrasting color for visually-impaired.
   a. Insert Strip Color: Yellow textured.
6. Basis of Design Product: Norament 926 Grano by Nora, or equal.
   a. Color: 5306 Camphor.

B. Rubber Tile at Stair Landings: Rubber tile matching tread/riser units for each location.

1. Tile Size: 39.53" x 39.53"
2. Tile Thickness: 0.14" (3.5mm)
3. Basis of Design Product: Norament Grano by Nora.
4. Colors: Match adjacent tread/riser units.

2.7 MISCELLANEOUS RESILIENT ACCESSORIES

A. Colors: As selected by Architect from manufacturer's full range of colors produced for accessory molding complying with requirements indicated.

B. Rubber Accessory Moldings: Provide rubber accessory molding complying with the following:

1. Product Description: Carpet edge for glue-down applications, carpet nosing, reducer strip for resilient flooring, and tile and carpet joiner.
   a. Provide rubber transition strip at resilient floor tile color changes - at doors.

2. Profile and Dimensions: As indicated or required.

2.8 INSTALLATION ACCESSORIES

A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.

B. Concrete Sealer: Type recommended and approved by resilient flooring manufacturer and adhesive manufacturer to ensure proper adhesion of resilient flooring to substrate.

C. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated.

D. Adhesives (Cements): Products supplied by resilient flooring and accessory manufacturers, of type recommended to suit resilient products and substrate conditions.

1. Provide two-part epoxy adhesive PA 127/139 provided by floor covering manufacturer for sheet flooring and base installation

E. Heat-Welding Bead: Solid-strand product of floor covering manufacturer for heat-welding seams.

1. Color and Pattern: Match color and pattern of sheet floor covering.

F. Chemical Seam Sealer: Product of floor covering manufacturer for chemically-welding seams.

G. Metal Accessories for PVC Wall Base:

1. Extruded aluminum cove cap.
2. Stainless steel corner guards for all outside corners
3. Stainless steel transition strips

H. Floor Polish: Acrylic type, as recommended by flooring material manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General: Examine areas where installation of flooring will occur, with Installer present, to verify that substrates and conditions are satisfactory for flooring installation and comply with flooring manufacturer's requirements and those specified in this Section.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond tests recommended by flooring manufacturer.
2. Finishes of subfloors comply with tolerances and other requirements specified in Division 03 Section "Cast-In-Place Concrete" for slabs receiving resilient flooring.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits of any kind.

C. Concrete Moisture Emission Tests: Perform calcium chloride test and moisture meter test as per manufacturer's directions, as follows, and other tests if recommended by resilient flooring and adhesive manufacturer:

1. Perform moisture test at rate of one per 2,000 sq.ft. of new and existing floor area to be covered.
2. Report test results in writing to Architect, and Contractor within 24 hours after tests are completed. Reports of concrete moisture emission tests shall contain the Project identification name and number, date of test location of test within structure.
3. Perform additional moisture emission tests of in-place concrete when test results indicate specified moisture content has been exceeded, as directed by Architect.
    a. Repeat test one week after initial test minimally and additionally repeat test if required by field conditions to determine moisture levels in area of resilient flooring application.

D. Do not proceed with installation until unsatisfactory conditions have been corrected.

E. Only if it is not possible to provide a concrete substrate with acceptable moisture levels, then a surface applied moisture mitigation system shall be used that meets the requirements of ASTM F3010 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.

3.2 PREPARATION

A. General: Comply with manufacturer's installation specifications to prepare substrates indicated to receive flooring.

B. Use trowelable leveling and patching compounds per flooring manufacturer's directions to fill cracks, holes, and depressions in substrates and to patch and level floors as required to provide suitable substrate for flooring application.

C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives by using a grinder, sander, or polishing machine with a heavy-duty wire brush.

D. Broom or vacuum clean substrates to be covered by flooring immediately before installation of flooring. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

E. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

F. Seal concrete substrates as required by moisture test results to ensure proper adhesion of resilient flooring to substrate.

3.3 TILE INSTALLATION

A. General: Comply with tile manufacturer's installation directions and other requirements indicated that are applicable to each type of tile installation included in Project.

B. Lay out tiles from center marks established with principal walls so tiles at opposite edges of room are of equal width. Install tiles square with room axis, unless otherwise indicated.

C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in decorative patterns as indicated on Drawings.

D. Scribe, cut, and fit tiles to butt tightly to vertical surfaces and edgings.

E. Extend tiles into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent, nonstaining marking device.

G. Install tiles on covers for telephone and electrical ducts, and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on covers. Tightly adhere edges to perimeter of floor around covers and to covers.

H. Adhere tiles to flooring substrates without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed tile installation.

I. Use full spread of adhesive applied to substrate in compliance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.

J. Hand roll tiles where required by tile manufacturer.

3.4 INSTALLATION OF PVC SHEET FLOORING

A. General: Comply with sheet floor covering manufacturer's written installation instructions for installation technique using both chemically welded and heat welded seams for watertight installation.

B. Unroll sheet floor coverings and allow them to stabilize before cutting and fitting, if recommended in writing by manufacturer.

C. Lay out sheet floor coverings to comply with the following requirements:

1. Maintain uniformity of sheet floor covering direction.
2. Arrange for a minimum number of seams and place them in inconspicuous and low-traffic areas, and not less than 6 inches (150 mm) away from parallel joints in flooring substrates.
3. Match edges of sheet floor coverings for color shading and pattern at seams according to manufacturer's written recommendations.
4. Avoid cross seams.

D. Scribe, cut, and fit sheet floor coverings to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

E. Extend sheet floor coverings into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent, nonstaining marking device.

G. Install sheet floor coverings on covers for telephone and electrical ducts, and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on covers. Tightly adhere edges to perimeter of floor around covers and to covers.

H. Adhere sheet floor coverings to flooring substrates to comply with floor covering manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.

1. Produce completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Chemically Welded and Heat-Welded Seams: Chemically weld seams using seam sealer provided by manufacturer in accordance with manufacturer’s directions. When seams are

fully cured, rout joints and heat weld with welding bead, permanently fusing sections into a seamless floor covering. Prepare, weld, and finish seams according to manufacturer's written instructions and ASTM F 1516 to produce surfaces flush with adjoining floor covering surfaces.

J. Hand roll sheet floor coverings in both directions from center out to embed floor coverings in adhesive and eliminate trapped air. At walls, door casings, and other locations where access by roller is impractical, press floor coverings firmly in place with flat-bladed instrument.

3.5 INSTALLATION OF RESILIENT STAIR TREADS/RISERS

A. Apply resilient treads/risers to stairs as indicated and according to manufacturer’s written installation instructions.

B. Use stair-tread-nose filler, according to resilient tread manufacturer’s written instructions, to fill nosing substrates that do not conform to tread contours.

3.6 INSTALLATION OF WALL BASE AND ACCESSORIES

A. General: Install resilient accessories according to manufacturer's written installation instructions.

1. Install PVC wall base with accessories according to manufacturer's written installation instructions.

B. Apply resilient wall base to walls, pilasters, casework, and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

1. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
2. Install preformed corners as per manufacturer’s directions.

C. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

3.7 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing installation:

1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers.
2. Sweep or vacuum floor thoroughly.
3. Do not wash floor until after time period recommended by resilient flooring manufacturer.
4. Damp-mop flooring to remove black marks and soil.

B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by flooring manufacturer.

1. Apply protective floor polish to flooring surfaces that are free from soil, visible adhesive, and surface blemishes. Coordinate selection of floor polish with Owner's maintenance service requirements.
2. Cover flooring with undyed, untreated building paper until inspection for Substantial Completion.

C. Clean flooring not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean flooring using method recommended by manufacturer.

1. Strip protective floor polish that was applied after completing installation prior to cleaning.
2. Reapply floor polish after cleaning.

END OF SECTION 096500

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes modular carpet tile flooring and modular carpet tile used as a walk off mat.

B. Related Requirements:

1. Division 09 Section "Resilient Flooring and Accessories" for resilient wall base and accessories installed with carpet tile.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
   a. Review delivery, storage, and handling procedures.
   b. Review ambient conditions and ventilation procedures.
   c. Review subfloor preparation procedures.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include installation recommendations for each type of substrate.

B. Shop Drawings: Show the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

E. Maintenance Data: For carpet tile to include in maintenance manuals specified in Division 01. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

F. Sustainability: Provide the Statement of the Achievement Level the carpet has attained for Gold, 52 to 70 points, based on specific Sustainable Attribute Performance for all product stages according to ANSI/NSF 140.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

B. Performance Characteristics of Carpet Tile: Provide carpet tile identical to that tested for the following performance characteristics, per test methods indicated:

1. Flammability: Passes DOC FF 1-70 Pill Test.
2. Flame Spread: Meets NFPA Class 1 when tested under ASTM E-648 Glue Down.
3. Smoke Density: 450 or less, Flaming Mode when tested under NBS Smoke Chamber NFPA-258.
4. Static: No more than 3.5 KV when tested under AATCC-134.
5. Specific Optical Density: Not more than 300 in first 4 minutes tested in flaming or non-flaming mode when tested under ASTM E662.
6. Critical Radiant Flux: 0.45 watts per sq. cm or more per ASTM E 648 or NFPA 253.

C. Mockups: Before installing carpet tile, install mockups for each type of carpet tile installation required to demonstrate aesthetic effects and qualities of materials and execution. Install mockups to comply with the following requirements, using materials indicated for the completed Work:

1. Install mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be installed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Remove mockups when directed.
7. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI Carpet Installation Standard 2011.

B. Store carpeting per manufacturer’s recommendations for allowable temperature and humidity range. Products shall not be allowed to become damp.

C. Remove carpeting from packaging and store in unoccupied, ventilated areas (100% outside air supply, minimum of 1.5 air changes per hour, no recirculation) for 24-72 hours prior to installation. Carpeting shall not be stored with materials which have high emissions of VOCs or other contaminants. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paint, wood preservatives, and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation;

gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders

1.9 FIELD CONDITIONS

A. Comply with CRI Carpet Installation Standard 2011 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.10 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
3. Warranty Period: Lifetime.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Manufacturers: Provide specified Basis of Design products or equal manufactured by one of the following manufacturers:

1. Bentley
2. Interface
3. Mannington
4. Milliken
5. Mohawk Commercial Carpet
6. Shaw
7. Tandus Centiva

B. Sustainable Carpet Certification: Provide carpet tile that has a NSF/ANSI 140 rating of Gold or better.

C. Emissions: Provide carpet tile that complies with testing and product requirements of Carpet and Rug Institute's "Green Label Plus" program.

D. Carpet Tile CPT1:

1. Construction: Tufted, textured patterned loop
2. Fiber Content: ColorStrand Nylon
3. Dye Method: Solution dyed
4. Soil Release Technology: EcoSentrySoil Protection
5. Stain Release Technology: EcoSentry Plus Stain Protection
6. Machine Gage: 1/12
7. Pile Weight: 18 oz/sq yd
8. Stitches per Inch: 13
9. Pile Thickness: 0.128”
10. Total Thickness: 0.230”
11. Density: 5062
12. Primary Backing: Synthetic non woven
13. Secondary Backing: EcoFlex Matrix
14. Size: 24 in x 24 in
15. Guarantees: Lifetime limited.
16. Basis of Design Product: Umpteen BT594 from SwitchCode Collection by Mohawk Group, or equal.
17. Color: 545 Echo.
18. Installation Method: As scheduled

E. Carpet Tile Walk-Off Mat (WOM):

1. Construction: Tufted, textured loop.
2. Fiber Content: 100% Nylon 6.
3. Dye Method: Solution dyed
4. Total Weight: 139 oz. per square yard.
5. Pile Height: 3.6mm
6. Total Height: 7.2mm
7. Backing: Bitumen backing
8. Size: 19-11/16 in x 19-11/16 in
9. Guarantees: Three years.
10. Basis of Design Product: Trilogy Tile from Arrival Collection by Matter Surfaces, or equal..
11. Color: Indigo
12. Installation Method: As scheduled.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

D. Carpet Edge Guard: Refer to Division 09 Section "Resilient Flooring and Accessories."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer. Do not install flooring if subfloor moisture emission rate exceeds indicated amounts.
    a. Calcium Chloride Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed the maximum moisture-vapor-emission rate acceptable to flooring manufacturer.
    b. Moisture Meter Testing: Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have relative humidity level measurement acceptable to flooring material manufacturer.
    c. Testing Procedures
        1) Where flooring is indicated to be applied to structural concrete topping or concrete slab-on-grade substrates, perform moisture meter tests.
        2) Where flooring is indicated to be applied to areas where hydraulic cement topping is installed, perform calcium chloride or moisture meter tests as required by topping manufacturer.
2. Subfloor finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" for slabs receiving carpet tile.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI Carpet Installation Standard 2011, Section 7, "Site Conditions; All Installations," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI Carpet Installation Standard 2011, Section 18, “Modular Carpet,” and with carpet tile manufacturer's written installation instructions.

B. Installation Method: Direct glue down.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern parallel to walls and borders, unless otherwise indicated.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI Carpet Installation Standard 2011, Section 20, "Protecting Indoor Installations."

1. Restrict traffic over adhesive installations for a minimum of 48 hours to allow proper adhesive cure.
2. Restrict exposure to water from cleaning or other sources for a minimum of 30 days.
3. If required to protect the finished floor covering from dirt or paint, or if additional work is to be done after the installation, cover carpeting with a non-staining building material paper.
4. Protect the installation from rolling traffic by using sheets of hardboard or plywood in affected areas.

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 097200 - WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Vinyl wall covering (WC-1 and WC4).

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include data on physical characteristics, durability, fade resistance, and flame-resistance characteristics.

B. Shop Drawings: Show location and extent of each wall-covering type. Indicate pattern placement, seams and termination points.

C. Samples for Verification: Full width by 36-inch- (1000-mm-) long section of wall covering from dye lot to be used for each type of wall covering indicated for each color, texture, and pattern required.

D. Schedule: For wall coverings. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance Data: For wall coverings to include in maintenance manuals.

B. Qualification Data: For installers.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installation shall be performed by skilled commercial wallcovering applicators with no less than three years of documented experience installing wallcovering of the types and extent specified for the project.

B. Fire-Test-Response Characteristics: Provide wall coverings, sealers and adhesives with the following fire-test-response characteristics as determined by testing identical products applied with identical adhesives to substrates per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Surface-Burning Characteristics (WC1): Class B per ASTM E 84.
2. Surface-Burning Characteristics (WC4): Class A per ASTM E 84.

1.5 DELIVERY, STORAGE AND HANDLING

A. Wallcovering shall be delivered to the job site in the manufacturer's original packaging, properly identified and labeled.

B. Material shall be stored in an undamaged condition in manufacturer's original packaging, maintained in a clean, dry, protected area where temperature and humidity remains stable and within the ranges specified by the manufacturer.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install wall coverings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.

C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

D. Substrates: Gypsum board substrates shall be finished to comply with AWCI Specification, Level 5 or higher.

PART 2 - PRODUCTS

2.1 WALL-COVERING PRODUCTS

A. General: Provide rolls of each type of wall covering from the same run number or dye lot.

B. Flame Spread: All wallcovering materials shall meet NFPA 701.

2.2 VINYL WALL COVERING

A. Vinyl Wall Covering (WC1): 24% cellulose/76% PVC printed mural type vinyl wallcovering with the following attributes:

1. Finish: Half-Matt
2. Base: Non-woven
3. Texture: Irregular canvas
4. Weight: 11.21 oz/sq. yd
5. Thickness: 0.012"
6. Mural Size: 400 x 280 cm
7. Pattern: Casa de Vidro Sunset Ref. 9000052 from Random Archist Collection.
8. Manufacturer: Cordonne, or equal.

B. Vinyl Wall Covering (WC4): Vinyl material with a protective coating meeting ASTM F-793 for Category VI, Type III with the following attributes:

1. Weight: 22.4 oz/sq. yd
2. Roll Width: 52-54"

3. Backing: Woven (Osnaburg)
4. Match: Non-Reverse hang, Random Match
5. Pattern/Color: TMV1-16 White Oak.
6. Basis of Design Product: Timber Vista - Flex by Koroseal, or equal.

2.3 ACCESSORIES

A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application, as recommended in writing by wall-covering manufacturer.

B. Primer/Sealer: Mildew-resistant primer/sealer complying with requirements in Division 09 Section "Painting" and recommended in writing by wall-covering manufacturer for intended substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of work.

B. Substrate Condition: Do not install wallcovering unless gypsum board wall surface has been prepared to Level 5 finish.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair wall covering's bond, including mold, mildew, oil, grease, incompatible primers, dirt, and dust.

C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum as permitted by each manufacturer for their product, when tested with an electronic moisture meter.
2. Gypsum Board: Prime with primer recommended by wall-covering manufacturer.

D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION

A. General: Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Install wallcovering in sequence of rolls as designated by manufacturer to result in finished installation matching layout drawings approved by the Architect.

C. Install wall covering with no gaps or overlaps, no lifted or curling edges, and no visible shrinkage.

D. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

E. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without any overlay or spacing between strips.

3.4 CLEANING

A. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.

B. Use cleaning methods recommended in writing by wall-covering manufacturer.

C. Replace strips that cannot be cleaned.

D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097200

SECTION 097750 - FIBER REINFORCED PLASTIC COATED PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes fiberglass reinforced polyester (FRP) panels.

1.2 ACTION SUBMITTALS

A. Product data for each type of product specified. Include data on physical characteristics, durability, fade resistance, and flame resistance characteristics.

B. Samples for initial selection purposes of each type and color available for fiber reinforced plastic coated panels and molding accessory required of size indicated below:

1. 3 inch square sample of each fiber reinforced plastic coated panel specified.
2. 6-inch long sample of each molding accessory.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates signed by fiber reinforced plastic coated panel manufacturer certifying materials furnished comply with specified requirements.

B. Certified test reports showing compliance with requirements for fire performance characteristics and physical properties.

C. Maintenance data for inclusion in Division 01 Section "Closeout Procedures." Include the following:

1. Methods for maintaining fiber reinforced plastic coated panels.
2. Precautions for use of cleaning materials and methods that could be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

A. Fire Performance Characteristics: Provide fiber reinforced plastic coated panels with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify fiber reinforced plastic coated panels with appropriate markings of applicable testing and inspecting organization.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

B. Installer Qualifications: Arrange for installation of fiber reinforced plastic coated panels by a firm that can demonstrate successful experience in installing similar in type and quality to those required for this Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect units during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

1.6 PROJECT CONDITIONS

A. Maintain a constant temperature not less than 70°F in installation areas for at least ten (10) days before and ten (10) days after installation.

B. Field Measurements: Where units are indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide FRP products as manufactured by Marlite, Division of Commercial and Architectural Products, Inc. or an approved equivalent by one of the following:

1. Crane Composites, Inc.
2. Kal-Lite.

2.2 FRP PANELS:

A. FRP Panels (FRP-1): High gloss fiberglass reinforced polyester panels 0.090" thick with smooth textured surface, Class A fire rating, 4-feet wide by height required.

1. Color: As scheduled.
2. Basis of Design Product: Standard FRP by Marlite, or equal.
3. Location: Wall cladding in kitchen.

B. Accessories: Provide inside corner, outside corner, division molding and edge trim moldings by same manufacturer, matching wall panels.

C. Adhesive: Manufacturer's standard low odor, VOC compliant, non-flammable latex based adhesive for use and substrate.

D. Sealant: Manufacturer's standard clear silicone sealant meeting local VOC requirements.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting installation and performance of fiber reinforced plastic coated panels. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Acclimate panels to room temperature for 48 hours prior to installation.

C. Follow manufacturer's printed instructions for surface preparation.

3.3 INSTALLATION

A. Do not use materials that are unsound, warped, bowed or twisted.

B. Install fiber reinforced plastic coated panels plumb, level, true, and aligned with adjacent materials.

1. Scribe and cut panels to fit adjoining work.
2. Install to tolerance of 1/32 inch in 8 feet for plumb and level.
3. Coordinate with materials and systems that may be in or adjacent to panels. Provide cutouts for mechanical and electrical items that penetrate.

C. Plan fiber reinforced plastic coated panel layout, balancing panel sizes at corners.

1. Adhere division molding and work from center of wall to corners.
2. Adhere FRP panels to substrate in accordance with manufacturer's written instructions.
3. Stagger joints between panels and substrate material.
4. Provide moldings at all sides of panels. Adhere ceiling line and curb moldings in place with sealant, and provide sealant in molding channels prior to insertion of panels.
5. Remove excess sealant from panel surfaces immediately.

3.4 ADJUSTING AND CLEANING

A. Repair damaged or defective fiber reinforced plastic coated panels where possible to eliminate functional or visual defects. Where not possible to repair, replace fiber reinforced plastic coated panels.

B. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.

C. Use cleaning methods recommended by the fiber reinforced plastic coated panel manufacturer.

D. Replace panels that cannot be cleaned.

3.5 PROTECTION

A. Provide final protection and maintain conditions that ensure panels are without damage or deterioration at time of Substantial Completion.

END OF SECTION 097750

SECTION 098413 - ACOUSTICAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Digitally printed Zintra acoustical wall panels (AP1).
2. Tackable, fabric covered acoustical wall panels (FWP1, FWP2, FWP3 and FWP4)

1.2 SUBMITTALS

A. Product Data: For each type of acoustical panel edge and installation material.

B. Shop Drawings: Include details at head, base, joints, corners, and intersections with shelves, countertops, doors, electrical outlets and switches, thermostats, and other components.

1. Include elevations showing panel layout on the walls.

C. Samples for Verification: For the following products. Prepare Samples from the same material to be used for the Work.

1. Sample Panels: No larger than 36 by 36 inches. Show joints, panel edges, and attachment methods.

D. Maintenance Data: For acoustical wall panels to include in maintenance manuals specified in Division 01. Include fabric manufacturers cleaning and stain-removal recommendations.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed work similar in material, design, and extent to that indicated for this Project and whose work has resulted in installation with a record of successful in-service performance.

B. Fire-Test-Response Characteristics: Provide acoustical wall panels with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Flame Spread: 25 or less.
2. Smoke Developed: 450 or less.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical wall panels from excessive moisture in shipment, storage, and handling. Deliver in unopened bundles and store in a dry place with adequate air circulation.

B. Before installing acoustical wall panels, permit them to reach room temperature and a stabilized moisture content.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical wall panels until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Verify acoustical wall panels sizes by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.6 COORDINATION

A. Coordinate layout and installation of acoustical wall panels with other construction that penetrates panels, including light fixtures, electrical outlets, HVAC thermostats and similar assemblies.

1.7 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Written warranty, signed by acoustical wall panel manufacturer agreeing to repair or replace panels that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, fabric sagging, distorting, or releasing from panel edge.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACOUSTICAL WALL PANELS

A. Acoustical Panels (AP1): Provide digitally printed acoustical wall panels as follows:

1. Base Material: Zintra; 100% solution dyed polyester
2. Nominal Panel Thickness: 1/2 inch
3. Panel Size: As indicated on Drawings
4. Edges: Square.

5. Base/Surface: Frost
6. Color/Pattern: A Breeze of Palm Leaves pattern in Lime color.
7. Mounting Method: Adhesive.
8. Basis of Design Product: Zintra Print by MDC Interior Solutions, or equal.

B. Acoustical Panels (FWP1, FWP2, FWP3 and FWP4): Provide fabric wrapped acoustical wall panels as follows:

1. Core: 24 lb./cu. ft mineral fiber core
2. Fabric Facing: Guilford of Maine FR701 - Style 2100; 100% polyester.
   a. Style: Off the Grid 1233

3. Nominal Panel Thickness: 7/8 inch
4. Size: 24" x 24"
5. Edges: Square edges, wrapped with fabric.
6. Colors:
   a. FWP1: Solar 1313
   b. FWP2: Fkora 1312
   c. FWP3: Hydro 1303
   d. FWP4: Tidal 1311.

7. Mounting Method: Nail clips and adhesive.
8. Basis of Design Product: S-3100 Wall Panels by Sound Seal or equal

C. Mounting Materlal: Adhesive, of type recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of acoustical wall panels.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install acoustical wall panels in locations indicated with vertical surfaces and edges plumb, top edges level and in alignment with other panels, and scribed to fit adjoining work accurately at borders and at penetrations. Comply with panel manufacturer's written instructions for installation of panels using type of mounting accessories indicated or, if not indicated, as recommended by manufacturer.

B. Panel Joints: No greater than 1/16-inch expansion space between adjoining panels, and 1/4-inch at floor, ceiling and around windows and door frames, etc.

C. Take care in handling panels with clean hands, so as not to soil panel material.

D. Attach acoustical wall panels to underlying construction according to manufacturer's written instructions, by adhesively fastening or nailing to substrate as per manufacturer’s directions.

E. At exterior corners, butt panels together with light contact to produce close fitting, uniform joints. Do not force panels into place.

F. At interior corners, butt adjoining panels together with light contact to produce close fitting, uniform joints. Do not force panels into place.

G. At vertical joints between panels in the same plane, butt panels at edges with light contact to produce close fitting, uniform joints. Do not force panels into place.

H. Cut holes in panels for services according to manufacturer's written instructions.

3.3 CLEANING AND PROTECTING

A. Clean exposed faces of installed panels, and related materials, and adjacent surfaces. Comply with manufacturer's recommendations for cleaning methods and materials.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure installation is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 098413

SECTION 099100 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and the application of paint and stain systems on the following interior and exterior substrates:

1. Concrete masonry units (CMU).
2. Plaster
3. Steel and iron.
4. Galvanized metal.
5. Gypsum board.
6. Wood
7. Plastic trim fabrications (Cellular PVC “Azek”).

B. Related Sections include the following:

1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.3 QUALITY ASSURANCE

A. MPI Standards: Maintain copy of this standard at the Project site at all times.

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
   a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
   b. Other Items: Architect will designate items or areas required.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.
   a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

C. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. PPG Architectural Finishes, Inc.
3. Sherwin-Williams Company.
4. Tnemec

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the permitted limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24)and the OTC (Ozone Transport Commission) restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop..

C. Colors: Refer to the Finish Schedule on the Drawings; provide specified colors as scheduled. Colors listed are for color matching purposes only.

D. Paint Strippers: Where restoration of existing wood and metal members and components is indicated on Drawings, use paint removers specifically designed for removing paint from substrates indicated, and approved by Architect for use on each substrate.

1. Low-Odor, Water-Based Paint Remover: Use manufacturer's standard low-odor, water-rinsable solvent-type gel formulation, containing no methanol or methylene chloride, for removing paint coatings from steel and wood. Provide Dumond Chemical Peel Away 1, or equal.
2. Do not use sandblasting, wire wheels, or any type of abrasive cleaners to remove paint on wood or metal

E. Detergent: Mild detergent, approved by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Masonry: 12 percent.
2. Gypsum Board: 12 percent.
3. Plaster: 12 percent
4. Wood: 15 percent

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Existing Metal and Wood to be Stripped and Refinished:

1. Comply with stripper manufacturer's printed directions.
2. Apply chemical stripper with a brush and remove the stripper and liquified finish by hand with scraping knives, steel wool and denatured alcohol. Use all necessary care to avoid scraping, scaring, or damaging profiles and surfaces.
3. Apply and remove stripper as many times as required to completely remove the finish buildup and provide a uniform surface appearance.
4. After buildup has been removed, clean surface with steel wool and denatured alcohol and wipe with a clean dry cloth.

E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

F. Steel and Iron Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

H. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

I. Plaster: Do not begin paint application until plaster is cured

J. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
2. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
3. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
4. When transparent finish is required, backprime with spar varnish or polyurethane.
5. Existing Surfaces: Wash exterior substrates thoroughly to remove mildew, dirt and chalk deposits. Remove all blistered, peeling and scaling paint to sound substrate by scraping, sanding, and wire brushing. Prime bare spots prior to applying finish coat. Remove loose or split sealant compounds and re-seal in accordance with Section 079200 "Joint Sealant."

K. Plastic Trim Fabrications Substrates:

1. Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
2. Lightly sand any areas that are shiny using very fine sandpaper (#220 grit) and wipe down.
3. Fill nail and screw holes with acrylic Bondo, or equal

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Application Procedures: Apply paints and coatings by brush or roller according to the manufacturer's directions, except as noted below. Spray application is not permitted for trim, ceilings and walls, unless specifically approved by Architect in advance for each individual situation. Roller application on woodwork is not permitted.

1. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
2. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
3. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

C. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

D. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

E. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

F. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

G. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:
   a. Uninsulated metal piping.
   b. Uninsulated plastic piping.
   c. Pipe hangers and supports.
   d. Tanks that do not have factory-applied final finishes.
   e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
   f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:
   a. Switchgear.
   b. Panelboards.
   c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. General: Provide listed products or equal products of other named manufacturers in Part 2.

B. Ferrous Metal (Steel and Iron): Polyurethane, Pigmented, Epoxy Zinc Rich Primer and High-Build Epoxy Coating System: Gloss or Semi-Gloss as selected by the Architect.

1. Prime Coat: Epoxy Zinc Rich Primer. Tnemec: Tneme-Zinc Series 90-97 or equal.
2. Intermediate Coat: High-performance, polyamidoamine -epoxy coating: Tnemec: Hi-Build Epoxoline II, Series L69F, tinted slightly lighter than top coat.
3. Topcoat (Gloss): Aliphatic Acrylic Polyurethane, Two-Component, Pigmented, Gloss: Tnemec Endura-Shield Series 1094.
4. Topcoat (Semi-Gloss): Aliphatic Acrylic Polyurethane, Two-Component, Pigmented, Semi-Gloss: Tnemec Endura-Shield Series 1095.

C. Zinc-Coated (Galvanized) Metal: Full-gloss, acrylic latex enamel finish - 2 coats - self-priming.

1. Prime Coat: Gloss acrylic latex enamel paint; MPI # 114, X-Green 114, 154, X-Green 154, 164, LEED 2009, LEED V4.
   a. Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28

2. Top Coat: Gloss acrylic latex enamel paint; MPI # 114, X-Green 114, 154, X-Green 154, 164, LEED 2009, LEED V4.
   a. Benjamin Moore Ultra Spec D.T.M. Acrylic Gloss Enamel HP28

D. Painted Wood Trim: Exterior Acrylic Latex, Satin or Gloss Finish as selected by Architect, self-priming. Two coats on new bare substrates, one coat repaint over sound, unpatched painted surfaces.

1. Prime Coat: All-purpose primer; MPI # 6, 17, X-Green 17, 39, 50, X-Green 50, 137, X-Green 137, LEED Credit, CHPS Certified.
   a. Benjamin Moore Fresh Start High-Hiding All Purpose Primer 046

2. First and Second Coats (Satin): Acrylic latex paint; MPI #15.
   a. Benjamin Moore Ultra Spec EXT Satin N448

3. First and Second Coats (Gloss): Acrylic latex paint; MPI #11.
   a. Benjamin Moore Ultra Spec EXT Gloss N449

E. Plastic Fabrications Substrates (Azek) and Fiberglass (FRP): Semigloss Waterborne Acrylic-Latex System; 2 finish coats over a primer.

1. Prime Coat: Factory-formulated acrylic-latex primer for exterior application.
   a. Benjamin Moore; Insl-X Stix Waterborne Bonding Primer SXA-110

2. Intermediate Coat and Topcoat: Factory-formulated semigloss waterborne acrylic-latex for exterior application; MPI # 11
   a. Benjamin Moore; Ben Waterborne Exterior Soft-Gloss 543

NOTE: Use the above system for colors that have a LRV (light reflective value) of 55 or higher (lighter colors). If colors selected has an LRV of 54 or lower (darker colors), use paints with heat reflective characteristics specifically formulated for use on vinyl/PVC products (vinyl-safe); one prime and two top coats.

3.7 INTERIOR PAINTING SCHEDULE

A. General: Provide listed products or equal products of other named manufacturers in Part 2.

B. Gypsum Board and Plaster Ceilings: Flat acrylic finish.

1. Prime Coat: Latex-based, interior primer; MPI # 50, X-Green 50, 149, X-Green 149, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Interior Latex Primer N534

2. Intermediate Coat and Topcoat: Factory-formulated flat acrylic latex paint for interior application; MPI # 53, X-Green 53, 143, X-Green 143, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Interior Latex Flat T535.

C. Gypsum Drywall and Plaster Walls: Semi-gloss, acrylic finish.

1. Prime Coat: Latex-based, interior primer; MPI # 50, X-Green 50, 149, X-Green 149, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Interior Latex Primer N534

2. Intermediate Coat and Topcoat: Semigloss acrylic-latex, interior enamel; MPI # 43, X-Green 43, 146, X-Green 146, 140, X-Green 140, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Latex Semigloss T539.

D. Gypsum Drywall Walls at Bathrooms and Janitor's Closets, and elsewhere as scheduled: Semi-Gloss, waterborne epoxy finish.

1. Prime Coat: 100% acrylic resin primer; MPI # 6, 17, X-Green 17, 39, 50, X-Green 50, 137, X-Green 137, LEED V4, CHPS Certified.
   a. Benjamin Moore; Fresh Start High-Hiding All-Purpose Primer 046.

2. Intermediate Coat and Topcoat: Single component pre-catalyzed waterbourne semi-gloss epoxy; Interior Epoxy (water based), MPI 153, LEED V4.
   a. Benjamin Moore; HP High Performance Pre-Catalyzed Waterborne Epoxy Semi-Gloss HP3410.

E. Hollow Metal Doors, Frames, and Sidelights, and Ferrous Metals: Semigloss, acrylic-enamel finish.

1. Prime Coat: Rust-Inhibitive Primer (Water Based), MPI #107, X-Green 107, 134, LEED V4, CHPS Certified.
   a. Benjamin Moore; HP High Performance Acrylic Metal Primer - White,HP1100.01.

2. Intermediate Coat and Topcoat: Factory-formulated semigloss acrylic-latex enamel for interior application; MPI # 163, X-Green 163, 153, X-Green 153, LEED V4.
   a. Benjamin Moore; HP High Performance DTM. Acrylic Semi-Gloss Enamel, HP3310

F. Concrete Masonry Units (CMU): Alkyd, water-based finish; in sheen as selected by Architect.

1. Prime Coat/Block Filler: MPI # 4, X-Green 4, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore Super Spec Masonry Interior/Exterior Hi-Build Block Filler 206.

2. Intermediate Coat and Topcoat: Alkyd, water-based finish; LEED 2009, LEED V4, CHPS Certified. One of the following:
   a. Satin: Benjamin Moore Advance Waterborne Interior Alkyd Satin 792.
   b. Semi-Gloss: Benjamin Moore Advance Waterborne Interior Alkyd Semi-Gloss 793.
   c. High Gloss: Benjamin Moore Advance Waterborne Interior Alkyd Gloss 794.

G. Concrete Masonry Units (CMU) at Bathrooms and Janitor's Closets, and elsewhere as scheduled: Semi-Gloss, waterborne acrylic epoxy finish.

1. Prime Coat: Acrylic block fillerior primer; LEED 2009.
   a. Benjamin Moore; Corotech Acrylic Block Filler V114..

2. Intermediate Coat and Topcoat: Two component semi-gloss acrylic-epoxy;Interior/Exterior Epoxy (water based), LEED 2009.
   a. Benjamin Moore; HPHigh Performance Pre-Catalyzed Waterborne Epoxy Semi-Gloss HP3410

H. Painted Woodwork: Semigloss, acrylic finish.

1. Prime Coat: Latex-based, interior primer; MPI # 50, X-Green 50, 149, X-Green 149, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Interior Latex Primer N534

2. Intermediate Coat and Topcoat: Semigloss acrylic-latex, interior enamel; MPI # 43, X-Green 43, 146, X-Green 146, 140, X-Green 140, LEED 2009, LEED V4, CHPS Certified.
   a. Benjamin Moore; Ultra Spec 500 Latex Semigloss T539.

END OF SECTION 099100

SECTION 101000 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following types of visual display boards:

1. Porcelain enamel markerboards.
2. Cork tackboards

1.2 SUBMITTALS

A. Product Data: Provide manufacturer's product data for each type of visual display board specified.

B. Shop Drawings: For each type of visual display board required, including dimensioned elevations. Show location of joints between individual panels where unit dimensions exceed maximum panel length. Include sections of typical trim members. Show anchors, grounds, reinforcement, accessories, layout, and installation details.

C. Samples for Verification: Of the following products, showing color and texture or finish selected. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected. Prepare Samples from the same material to be used for the Work.

1. Tackboards: Sample panels of actual materials to be supplied in the finshed Work, not less than 8-1/2 by 11 inches, mounted on the substrate indicated for the final Work. Include a panel for each type, color, and texture required.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain visual display boards through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide materials with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Class A for whiteboards
2. Class B for cork tackboards.

C. Provide GREENGUARD certified products.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify field measurements before preparation of Shop Drawings and before fabrication to ensure proper fitting. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating markerboards without field measurements. Coordinate wall construction to ensure actual dimensions correspond to established dimensions.

1.5 WARRANTY

A. General Warranty: The special porcelain enamel warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Porcelain Enamel Warranty: Furnish the manufacturer's written warranty, agreeing to replace porcelain enamel markerboards that do not retain their original writing and erasing qualities, become slick and shiny, or exhibit crazing, cracking, or flaking, provided the manufacturer's instructions with regard to handling, installation, protection, and maintenance have been followed.

1. Warranty Period: Lifetime.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Porcelain Enamel Markerboards:
   a. Claridge Products and Equipment, Inc.
   b. Greensteel, Inc.
   c. Lemco, Inc.

2. Tackboards:
   a. Best-Rite Chalkboard Co.
   b. Carolina Chalkboard Co.
   c. Claridge Products and Equipment, Inc.
   d. Ghent Manufacturing, Inc.
   e. Greensteel, Inc.
   f. Lemco, Inc.
   g. Marsh Chalkboard Company.

2.2 MATERIALS, GENERAL

A. Low-Emitting Materials: All composite wood, engineered wood, or agrifber products (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI)

B. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 80 g/L

2.3 TACKBOARDS

A. Wood Framed Cork Faced Tackboards (TB6 and TB8): Color impregnated cork board composed of 1/4” thick self-healing, burlap backed cork laminated to a ¼” hardboard, surrounded by 1-3/4" wide oak face trim.

1. Frame Style: 1-3/4" face, mitered corners, in maple wood.
2. Wood Finish: Clear maple
3. Corkboard Material: Claridge Cork
4. Color: Blueberry 1129
5. Accessories: Z-bar hanger clips at top.
6. Size(s):
   a. TB6: 4'-0" x 6'-0"
   b. TB8: 4'-0" x 8'-0"

7. Basis of Design Product: Grain Tackboard by Claridge or equal in the following models:
   a. TB6: GR46-CC
   b. TB8: GR48-CC.

2.4 MARKERBOARDS, FIXED

A. Wood Framed Porcelain Enamel Magnetic Markerboards: Provide balanced, high-pressure-laminated porcelain enamel boards of 3-ply construction consisting of face sheet, core material, and backing, that will accept magnetic accessories and can serve as a projection surface, surrounded by 1-3/4" wide oak face trim.

1. Frame Style: 1-3/4" face, mitered corners, in oak wood.
2. Wood Finish: Natural Oak.
3. Markerboard: LCS 3 Markerboard by Claridge
4. Markerboard Color: White
5. Accessories:
   a. Z-bar hanger clips at top.
   b. Full length marker tray, four assorted markers and one microfiber eraser cloth.

6. Size(s): Refer to Tackboard and Whiteboard Schedule
7. Basis of Design Product: Grain Whiteboard by Claridge or equal.

2.5 ACCESSORIES

A. Mounting Accessories: Provide angle clip hangers and mounting adhesive supplied by manufacturer.

2.6 FABRICATION

A. Assembly: Provide factory-assembled tackboards and markerboard units in single units without joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine wall surfaces, with Installer present, for compliance with requirements and other conditions affecting installation of visual display boards.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Deliver factory-built visual display boards completely assembled in one piece without joints.

B. Install units in locations and at mounting heights as indicated on drawings; comply with manufacturer's installation instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.

3.3 ADJUST AND CLEAN

A. Verify that accessories required for each unit have been properly installed

B. Clean units in accordance with the manufacturer's instructions. Break in markerboards only as recommended by the manufacturer.

END OF SECTION 101000

SECTION 101200 - DISPLAY CASES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bulletin boards, surface mounted (DC1) and recess mounted (DC2)

1.2 DEFINITIONS

A. Bulletin Board: Tackable visual display surface or tackboard enclosed in a display case.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for display cases.

B. Shop Drawings: For display cases. Include plans, elevations, sections, details, and attachments to other work.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display surfaces, operating hardware to include in maintenance manuals.

B. Keys for locking doors.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain display cases from single source from single manufacturer.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install display cases until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Low-Emitting Materials: All composite wood, engineered wood, or agrifber products (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI)

B. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Contact Adhesive: 80 g/L

2.2 BULLETIN BOARD

A. General: Factory-fabricated unit consisting of manufacturer's standard wall-mounted cabinet with tackboard assembly on back inside surface and operable glazed door at front.

B. Basis of Design Product: Sliding glass door type with metal frames, as follows:

1. Metal Framed Cabinet: 1-1/2" x 3" heavy-gauge rectangular aluminum trim with clear anodized finish. Contemporary style frame.
2. Doors: Two 3/16” tempered sliding glass doors with ground-in finger pulls and flat key tumbler locks.
3. Fabric Covered Tackboards: 100% post-consumer recycled polyester fabric, 16 oz/lin yd weight, Class A flame spread per ASTM E84.
    a. Basis of Design Product: Guilford of Maine FR701 2100 in color scheduled
4. Size: 48 by 60 inches.
5. Inside Depth: 1-3/4".
6. Mounting: Z-bar mounting hangers
    a. DC1: Surface mounted
    b. DC2: Recess mounted.
7. Basis of Design Products: Contemporary Bulletin Board Cabinet by Claridge, or equal products by one of the following:
    a. United Visual Products Inc.
    b. ADP Lemco
    c. Ghent

2.3 FABRICATION

A. Fabricate bulletin boards to requirements indicated for dimensions, design, and thickness and finish of materials.

B. Fabricate cabinets and door frames with reinforced corners, mitered to a hairline fit, with no exposed fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine walls and partitions for proper backing for bulletin boards.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install units in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

1. Mounting Height: Install product at heights to conform to Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.

B. Bulletin Boards: Attach units to wall surfaces with manufacturer's standard concealed hardware.

3.3 ADJUSTING AND CLEANING

A. Adjust doors to operate smoothly without warp or bind and so contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.

END OF SECTION 101200

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Panel signs, interior
2. Vinyl reflective label (Truss Identification Signs)
3. Plaques
4. Signage accessories

1.2 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.

1. Provide message list for each sign, including large-scale details of wording, lettering, and braille layout.
2. Provide full size template of engraved plaque sign.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

1. Panel Signs: Samples of each finish type and color, on not less than 4-inch squares of plastic material, showing the full range of colors available

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:

1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will be returned for installation into Project.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by signage manufacturer.

B. Source Limitations: Obtain each sign type through one source from a single manufacturer.

C. Regulatory Requirements: Comply with ANSI A.117.1 - 2017 and with code provisions as adopted by authorities having jurisdiction.

1. Interior Code Signage: Provide signage as required by accessibility regulations and requirements of authorities having jurisdiction. These include, but are not limited to, the following:
   a. Room Capacity.
   b. Elevator Signs.
   c. Stairway Identification.
   d. Signs for Accessible Spaces.

2. Special Signage for Truss Construction: Provide truss identification sign in compliance with 19 NYCRR Part 1264, minimum 6" diameter; for locations as directed by Architect.

1.5 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Fabricator of Interior Panel Signs:
   a. ASI Sign Systems inc.
   b. Bell Company
   c. Sign Pro
   d. CAB Signs
   e. InPro Corp.

2. Fabricators of Exterior Truss signs:
   a. Safety Sign.com
   b. Building Signs.com

c. Emedco - A Brady Corporation Company

3. Manufacturers of Plaques:
   a. Advance Corporation; Braille-Tac Division.
   b. A. R. K. Ramos.
   c. Gemini Incorporated.
   d. Matthews International Corporation; Bronze Division.
   e. Metal Arts; Div. of L&H Mfg. Co.
   f. Mills Manufacturing Company.
   g. Nelson-Harkins Industries.
   h. Southwell Company (The).

2.2 PANEL SIGNS

A. General: Provide signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

1. Produce sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally.
2. Sign materials shall meet a Class A finish.

B. Interior Panel Signs; Photopolymer: Provide lettering, graphics and background materials in custom styles and colors to match those specified on Drawings.

1. Material Composition: 0.032 inch (0.8 mm) thick moisture resistant, non-glare interior nylon photopolymer on ultraviolet resistant clear PETG sign base, single piece construction. Laminated photopolymers, added-on characters, and engraved characters are not acceptable.
2. Base Thickness: 1/8 inch thick minimum
3. Type and Colors: As specified on Drawings.
4. Sign Design and Layout: As indicated on Drawings.
5. Lettering and Braille Content: Provide letters raised 1/32 inch (.79 mm), and grade 2 braille for each specific location. Minimum text height: 5/8 inch (15.8 mm).
6. Pictograms: Provide graphics raised 1/32 inch (.79 mm), with lettering and braille written description directly below.
7. Lettering Style: As indicated on Drawings.
8. Copy Location: As indicated on Drawings.
9. Corners and Edges: As indicated on Drawings.
10. Surface Burning Characteristics: Flame spread/smoke developed rating less than 75/120, tested to ASTM E 84 and UL 723.
11. Rate of Burning: Tested to ASTM D 635 at nominal 0.060 inch thickness with resulting Classification CC1.
12. Vertical Burning: Tested to UL 94, classified as 94V-2 in thickness of 0.118 inch or greater and 94HB in thicknesses less than 0.118 inch.
13. Self-Ignition Temperature: 800 degrees F, tested to ASTM D 1929.
14. Basis of Design Product/Material: Novacryl PT Series Photopolymer, or equal.

C. Exterior Reflective Vinyl Signs (Truss Identification Signs):

1. Material: 3M engineering grade reflective vinyl label, self-adhering.
2. Mounting: Self-adhering label.
   a. Wall and door mounted.

3. Custom Paint Colors: Circle and contents shall be reflective red, conforming to Pantone system (PMS) #187.
   a. Background Color: Reflective white.

4. Signs identifying the existence of truss construction shall consist of a circle 6-inches (152.4 mm) in diameter, with a stroke width of 1/2-inch (13 mm).
5. Signs identifying the existence of truss construction shall contain the roman alphanumeric designation of the construction type of the building, in accordance with the provisions for the classification of types of construction set forth in Section 602 of the Building Code of New York State (refer 19 NYCRR Part 1221), and an alphabetic designation for the structural components that are of truss constriction, as follows:
   a. “F” shall mean floor framing, including girders and beams.
   b. “R” shall mean roof framing.
   c. “FR” shall mean floor and roof framing.

6. The construction type designation shall be placed at the twelve o’clock position over the structural component designation, which shall be placed at the six o’clock position.
7. Signs identifying the existence of truss construction shall be affixed in the locations identified below:
   a. On exterior building entrance doors, exterior exit discharge doors, exterior roof access doors to stairway; sign shall be attached to the doors, or attached to a sidelight or the face of the building not more than 12-inches (305 mm) horizontally from the latch side of the door jamb, and not less than 42-inches (1067 mm) nor more than 60-inches (1524 mm) above the adjoining walking surface.
   b. At multiple contiguous exterior building entrance or exit discharge doors, signs shall be attached at each end of the row of doors and at a maximum horizontal distance of 12-feet (3.65 m) between signs, and not less than 42-inches (1067 mm) nor more than 60-inches (1524 mm) above the adjoining walking surface.
   c. At fire department hose connections, signs shall be attached to the face of the building not more than 12 inches (305mm) horizontally from the center line of the fire department hose connection, and not less than 42-inches (1067 mm) nor more than 60-inches (1524 mm) above the adjoining walking surface.

8. Text and Layout: Refer to the Signage Drawings..

2.3 PANEL ACCESSORIES

A. Mounting Methods:

1. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides; 3M "VHB Heavy Duty Mounting Tape" or equal.
2. Adhesive: As recommended by sign manufacturer.
3. Mechanical Fasteners: Stainless steel screws.

2.4 PLAQUES

A. Cast Plaques: Provide cast metal plaque, as follows:

1. Plaque Material: Bronze.
2. Edge Style: Single line border.
3. Mounting: Concealed studs for projected mounting on substrate.
4. Thickness: 3/4" thick.
5. Finish: Leatherette with brushed surface.
6. Color: 1315 Dark Oxide polished. with satin clear coat.
7. Copy, Size and Shape: Raised copy, Arial font, and as indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate interior wall signs and accessories where indicated, in accordance with ANSI A.117.1 - 2017 and with code provisions as adopted by authorities having jurisdiction, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
2. Mount signs on wall adjacent to the latch side of door, unless otherwise indicated. Where there is no wall space to the latch side of the door, including at double leaf doors, mount sign on the nearest adjacent wall as approved by the Architect. Mount

signs at 48-inches (1219 mm) from the baseline of the lowest characters to the finished floor.

3. Locate signs to allow approach within 3-inches (75 mm) of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Panel Signs and Directories: Attach signs to wall surfaces using methods indicated below:

1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

C. Truss Identification Signs: Install self-adhesive labels in locations as specified in in 2.2 of this Section.

D. Glass-Mounted Panel Signs: Provide backer panel that matches color and size of panel sign and adhere to glass surface. Mount panel signs to backer panel using self-adhesive methods.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

3.4 INTERIOR SIGN SCHEDULE

A. Provide signage as indicated and scheduled on Drawings.

B. Coordinate with Architect for occupancy capacity numbers to include on signage

END OF SECTION 101400

SECTION 102113 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes solid phenolic units as follows:

1. Toilet Enclosures: Floor-anchored, overhead braced.
2. Urinal Screens: Wall hung

1.2 ACTION SUBMITTALS

A. Product data for each type and style of toilet compartment and screen specified. Include details of construction relative to materials, fabrication, and installation. Include details of anchors, hardware, and fastenings.

B. Shop drawings for fabrication and erection of toilet compartment assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.

1. Show locations of reinforcement and cutouts for compartment-mounted toilet accessories.

C. Samples for Verification: Of each type of color and finish required for units, prepared on 6-inch- (150-mm-) square samples of same thickness and material indicated for Work

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance Data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.

1.4 QUALITY ASSURANCE

A. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.

B. Fire-Test-Response Characteristics: Provide materials with surface-burning characteristics as indicated below, meeting ASTM E 84 for Class B.

1. Flame Spread: 75 or less.
2. Smoke Developed: 450 or less

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.6 WARRANTY

A. Warranty shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Provide a manufacturer's warranty covering the material and workmanship for a period of twenty-five (25) years from the date of final acceptance.

C. Repair or replace any part which becomes defective or breaks during the warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturer: Provide specified products of ASI Global Partitions or equal products by one of the following:

1. Bobrick
2. Bradley
3. Hadrian.

2.2 MATERIALS

A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.

B. Solid Phenolic Panels: Solid phenolic-core panel material with melamine facing on both sides fused to substrate during panel manufacture (not separately laminated), with transparent protective top coat, and with eased and polished edges. Phenolic core color shall be the same as the surface sheets.

1. Thickness: 1/2 inch, except doors and pilasters shall be 3/4" thick.
2. Color and Pattern of Face Sheets: 3074 Pastel Grey.
3. Color of Exposed Phenolic Core at Panel Edges: Match face sheets
4. Finish: Matte.

C. Pilaster Shoes and Sleeves (Caps): ASTM A 666, Type 302 or 304 stainless steel, not less than 0.0312 inch thick and 3 inches high, finished to match hardware.

D. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories, complying with ADA requirements, of the following material:

1. Material: Stainless steel.

E. Mounting Brackets: Manufacturer's standard continuous U-Bracket design for attaching panels and screens to walls and pilasters of the following material:

1. Material: Stainless steel.

F. Pedestals: Anodized aluminum mounted under panels to provide 1” floor clearance. Pedestal shall have adjustment to allow for sloped floors.

G. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile in manufacturer's standard finish.

H. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.3 FABRICATION

A. General: Provide standard doors, panels, screens, and pilasters fabricated for compartment system. Provide units with cutouts and drilled holes to receive compartment-mounted hardware, accessories, and grab bars, as indicated.

1. Basis of Design Product (V1): ASI Global Color-Thru Phenolic Partitions, Ultimate Privacy series or equal.
2. Toilet Room Partitions: Provide extra height partitions and doors, as follows:
   a. Door and Panel Height: 72" high
   b. Height Above Floor: 9"
3. Screen Size: 24"w x 48"h mounted 18" above floor.
4. Fabricate with pre-installed threaded inserts on doors and pilasters for attachment of components.
5. Provide built-in no sight feature that eliminates sight lines into the stall.
6. Provide rabbeted edge on hinge and latch side providing flush finish and full privacy.

B. Overhead-Braced Compartments: Provide anodized aluminum angle supports and leveling bolts at pilasters as recommended by manufacturer to suit floor conditions. Make provisions for setting and securing continuous, extruded, aluminum, antigrip, overhead bracing at top of each pilaster. Provide shoe at each pilaster to conceal supports and leveling mechanism.

C. Screens: Attach with anchoring devices as recommended by manufacturer to suit supporting structure. Set units to provide support and to resist lateral impact.

D. Doors: Unless otherwise indicated, provide 24-inch-wide in-swinging doors for standard toilet compartments and 36-inch-wide out-swinging doors with a minimum 32-inch-wide clear opening for compartments indicated to be handicapped accessible.

1. Hinges: Continuous spring-loaded type fabricated from stainless steel with nylon separators at knuckles and stainless pivot pins, that can be adjusted to hold door open at any angle. Provide theft proof fasteners
2. Latch and Keeper: Provide surface-mounted indicator latch/keeper system with integral occupancy indicator. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be handicapped accessible.
3. Coat Hook and Door Bumper: Anodized aluminum with rubber bumper.
4. Door Pull: Manufacturer's standard unit that complies with accessibility requirements of authorities having jurisdiction at out-swinging doors. Provide units on both sides of doors at compartments indicated to be handicapped accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch between pilasters and panels and not more than 1 inch (25 mm) between panels and walls. Secure units in position with manufacturer's recommended anchoring devices.

1. Secure panels to walls and panels with continuous brackets attached to the panel. Locate wall bracket fasteners so holes for wall anchors occur in masonry or tile joints. Secure panels in position with manufacturer's recommended anchoring devices.

B. Overhead-Braced Compartments: Secure pilasters to floor and level, plumb, and tighten installation with devices furnished. Secure overhead brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position

C. Screens: Attach with anchoring devices according to manufacturer's written instructions and to suit supporting structure. Set units level and plumb and to resist lateral impact.

3.3 ADJUST AND CLEAN

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and swing doors in entrance screens to return to fully closed position

B. Provide final protection and maintain conditions that ensure toilet compartments and screens are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 102113

SECTION 102123 - CUBICLE TRACKS AND CURTAINS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Ceiling mounted cubicle curtains and tracks.

B. Related Sections: The following sections contain requirements that relate to this Section:

1. Division 05 Section "Metal Fabrications" for support framing above ceiling.

1.2 SUBMITTALS

A. Product Data including durability, fade resistance, and fire-test-response characteristics for each type of curtain fabric specified.

B. Shop Drawings showing layout and types of cubicles, size of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.

C. Coordination Drawings for reflected ceiling plans drawn accurately to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension assembly members.
2. Method of attaching cubicle curtain track hangers to building structure.
3. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.

D. Samples for verification of the following products, showing the full range of color, texture, and pattern variations expected.

1. Curtain Fabric: 12-inch- (300-mm-) square swatch from dye lot used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of material.
2. Mesh Fabric: Manufacturer's standard-size unit, not less than 4 inches (100 mm) square.
3. Cubicle Curtain Track: Manufacturer's standard-size unit, not less than 4 inches (100 mm) long.
4. Curtain Carrier: Manufacturer's full-size unit.

E. Schedule of cubicles using same room designations indicated on Drawings.

F. Product certificates signed by manufacturers of cubicle tracks and curtains certifying that their products comply with specified requirements.

G. Maintenance data for cubicle tracks and curtains to include in the operation and maintenance manual specified in Division 1.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Fire Performance Characteristics: Provide cubicle curtain fabric which complies or exceeds with the requirements of NFPA Bulletin 701.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain cubicle curtain and track system from one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, quality or grade, fire performance characteristics, and lot number.

B. Comply with instructions and recommendations of manufacturer for special delivery, storage, and handling requirements.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below, before construction begins, that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.

1. Curtain Carriers and Track End Caps: Before installation begins, furnish quantity of full-size units equal to 3 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include but are not limited to, the following:

1. Arc-Com Fabrics, Inc.
2. General Cubicle Company
3. Imperial Fastener Company
4. A.R. Nelson Co., Inc.
5. Construction Specialties

2.2 CUBICLE TRACK

A. Curtain Track: Extruded 6063-T5 aluminum alloy track with clear satin anodized finish designed for surface mounting to ceiling. Track shall be nominally 1-3/8"W x 3/4"H with .058" wall thickness. Provide tracks with all necessary connectors, end stops and other accessories as required.

1. Curved Track: Factory fabricated, not less than 12-inch- (300-mm-) radius bends.
2. Splicing Clamp: Same material and finish as track.
3. Basis of Design Track: C/S 6062 by Construction Specialties, or equal.

B. Curtain Carriers: Roller-type carriers with virgin nylon wheels and axles, metal bead chains, and metal hooks; provide one per curtain grommet.

1. Spool Carriers: C/S SP062 by Construction Specialties or equal.

C. Track Accessories: Provide end caps, connectors, end stops, coupling sleeves, wall brackets, and other accessories as required for secure and operational installation. Provide a quantity of carriers for 6-inch (150-mm) spacing the full length of the curtain plus 1 additional carrier.

2.3 CUBICLE CURTAIN

A. Fabric: Provide cubicle curtain fabrics with the following characteristics:

1. Fabric Content: 100% Polyester.
2. Passes NFPA 701.
3. Antimicrobial Treatment: Manufacturer’s standard.
4. Curtain Color/Pattern: CSelect Fabric, Bark pattern, Rain Clouds color. Railroaded.
5. Basis of Design Fabric: Traditional Privacy Curtains by Construction Specialties, or equal.

B. Curtain Top: Type B manufacturer’s standard ½” holed mesh top, framed around perimeter with matching fabric as specified. Mesh height shall be 21 inches.

C. Provide curtains fabricated to comply with the following requirements:

1. Width: Equal to track length from which curtain is hung plus 10 percent, but not less than 12 inches.
2. Length: Equal to floor-to-ceiling height minus 2 inches from finished ceiling at top and 12 inches above finished floor.
3. Top Hem: Not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double stitched.

a. Grommets: 2-piece, rolled-edge, rustproof, nickel-plated brass and spaced not more than 6 inches o.c.

4. Bottom and Side Hems: Not less than 1 inch wide, reinforced, triple thickness, and single stitched.
5. Seams: Not less than 1/2 inch wide, double turned and double stitched.

D. Curtain Tieback: At each termination.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine ceilings for suitable conditions where cubicle track is to be installed.

B. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install cubicle curtain and track system and accessories in compliance with manufacturer's recommendations.

B. Surface-mount curtain track on ceiling surface by fastening track through finished ceiling to steel support framing above ceiling using metal fasteners of type and at spacing recommended by manufacturer.

1. Install ceiling-mounted tracks at intervals of not less than 24 inches (610 mm).
2. Center fastener in track to insure unencumbered carrier operation.

C. Wherever possible, install curtain track in uninterrupted lengths to avoid splices.

D. Attach curtain to hangers just prior to Substantial Completion to ensure curtain is clean and undamaged at time of Owner's acceptance of work.

3.3 ADJUSTING

A. Where recommended by the manufacturer, lubricate bearings and sliding parts; adjust to ensure smooth, easy operation.

3.4 PROTECTION

A. Protect installed track opening with a nonresidue adhesive tape to prevent debris from the ceiling finishing operation from impeding carrier operation.

END OF SECTION 102123

SECTION 102600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Corner guards.

1.2 ACTION SUBMITTALS

A. Product Data: Include physical characteristics for each wall and door protection system component indicated.

1. Include product data for adhesives indicating VOC content.

B. Shop Drawings: Show locations, extent, and installation details of each wall and door protection system component. Show methods of attachment to adjoining construction. Show layout of wall panels and proposed reveal locations.

1.3 INFORMATIONAL SUBMITTALS

A. Certified test reports showing compliance with requirements for fire performance characteristics and physical properties.

B. Maintenance Data: For each wall and door protection system component to include in maintenance manuals specified in Division 01. Include the following:

1. Precautions for use of cleaning materials and methods that could be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wall and door protection units through one source from a single manufacturer.

B. Fire Performance Characteristics: Provide wall and door protection units with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction.

1. Flame Spread: 75 or less.
2. Smoke Developed: 450 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store wall and door protection materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install wall and door protection components until the space is enclosed and weatherproof and ambient temperature within the building is maintained at not less than 70 deg F (21 deg C) for not less than 72 hours before beginning installation.

B. Field Measurements: Where units are indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering wall and door protection products that may be incorporated into the Work include, but are not limited to, the following:

1. Alpar Architectural Products, LLC
2. Arden Architectural Specialties, Inc
3. Boston Retail Products.
4. Construction Specialties, Inc.
5. IPC Door and Wall Protection Systems, InPro Corp.
6. Pawling Corporation.

2.2 MATERIALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M.

B. Adhesives: Type recommended by manufacturer for applications indicated. .

2.3 CORNER GUARDS

A. Surface-Mounted, Metal Corner Guards: Fabricated from 1-piece, formed or extruded metal with formed edges; with 90-degree turn.

1. Material: Stainless steel, Type 430.
   a. Thickness: Minimum 0.059 inch (16 gauge).
   b. Finish: Directional satin, No. 4.

2. Wing Size: 1-1/2 by 1-1/2 inches.
3. Corner Radius: 1/8 inch.

4. Height: 4 ft.
5. Mounting: Adhesive, of type recommended by manufacturer.
6. Basis of Design Product: Surface mount Stainless Steel Corner Guard by InPro, or equal.

2.4 FABRICATION

A. General: Fabricate wall and door protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including thicknesses of components.

B. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.5 METAL FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Remove tool and die marks and stretch lines or blend into finish.
2. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

C. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions in which wall and door protection system components and materials will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing wall and door protection system components.

B. General: Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. General: Install wall and door protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

1. Install wall and door protection units in locations and at mounting heights indicated on Drawings.

B. Do not use materials that are unsound, warped, bowed or twisted.

3.4 ADJUSTING AND CLEANING

A. Clean installed wall and door protection units. Use cleaning methods recommended by the manufacturer.

3.5 PROTECTION

A. Provide final protection and maintain conditions that ensure wall and door protection units are without damage or deterioration at time of Substantial Completion.

END OF SECTION 102600

SECTION 102800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Washroom accessories.
2. Mirrors.
3. Warm air dryers
4. Adult/special needs diaper changing station
5. Hooks

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated on Contract Drawings.
2. Identify products using designations indicated on Contract Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals, including replaceable parts and service recommendations.

1.3 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Inserts and Anchorages: Furnish accessory manufacturer’s standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.4 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

C. Coordinate required blocking in wall to support changing station loading.

PART 2 - PRODUCTS

2.1 GRAB BARS

A. Grab Bars; Stainless Steel Type (Tag C, D, H and J): Provide grab bars with wall thickness not less than 18 gage, concealed mounting with snap lock covers, satin finish, 1-1/2-inch clearance between wall surface and inside face of bar, outside diameter of 1-1/4 inches.

1. Sizes:
   a. Type C: 28"
   b. Type D: 36"
   c. Type H: 48"
   d. Type J: 18"

2. Configurations: As indicated on Drawings.
3. Basis of Design Products: Bradley 832 Series.

2.2 MIRROR UNITS

A. Aluminum Framed Mirror Units (Tag F/F1): Fabricate frame from aluminum alloy with radius corners mitered, welded, and ground smooth, with triple layer backing and 4mm tempered glass.

1. Size: 36" x 24"
2. Finish: Nickel
3. Basis of Design Product: Tyro Bathroom Decorative Home Decor Corner Hangs Bathroom Mirror by Latitude Run, or equal.

2.3 COMBINATION TOILET TISSUE DISPENSER/WASTE RECEPTACLE UNITS

A. Surface Mounted Type (Type K1): Surface mounted combination unit shall include dual roll toilet tissue dispenser and napkin disposal and be fabricated of stainless steel with seamless exposed surfaces in satin finish. Door and back panel shall be 18 gauge. Door shall have piano hinge and tumbler lock. Overall dimensions: 17-1/8"W x 20"H x 4-1/2" D..

1. Basis of Design Product: Bradley Model 5942-11

2.4 COMBINATION PAPER TOWEL DISPENSER AND WASTE RECEPTACLE

A. Combination Paper Towel Dispenser and Waste Receptacle, Surface Mounted (Tag L): Fabricate from 22 gauge stainless steel with exposed surfaces in satin finish. Cabinet doors with full length piano hinge and secured by tumbler locks. Towel dispenser capacity 1100 single-fold, 800 multi-fold or 500 C-fold towels. Removable 8.2 gal. leakproof molded plastic insert for waste receptacle

1. Overall Dimensions: 17-1/8"W x 56"H x 7-1/2"D.
2. Basis of Design Product: Bradley Model 238-11 (projects 7-1/2")

2.5 TOILET TISSUE DISPENSERS

A. Surface-Mounted Multi-Roll Toilet Tissue Dispenser (Type K3): Fabricate dual-roll toilet tissue dispenser from 22 gauge stainless steel with exposed surfaces in satin finish; with hinged service door and tumbler lock keyed like other Bradley units. Cabinet holds two rolls of 4½" x 5" standard core toilet tissue, one above the other. When first roll is used up, fresh roll automatically drops down for use.

1. Basis of Design Product: Provide Bradley Model 5402 or equal.

2.6 SOAP DISPENSER

A. Liquid Soap/Gel Sanitizer Dispenser, Surface Mounted (Tag M/M1): Automatic wall-mounted soap dispenser shall be Type-304 stainless steel with satin finish, with corrosion-resistant valve that can dispense a variety of liquid soaps, iodine based soaps, and alcohol based liquid or gel hand sanitizers. Valve shall be sensor-activated and not require contact with the dispenser to function. Lockable housing shall be equipped with a clear acrylic refill-indicator window and be hinged for refilling and maintenance. Container shall have a capacity of 850 ml (30-fl oz). Unit shall have CE Certification. Requires three (3) Alkaline “C” Cell Batteries, 1.5V.

1. Dimensions: 4-3/16" W x 9-9/16" H x 4-7/32" D.
2. Basis of Design Product: Provide Bobrick Model B-2012 or equal.

2.7 WARM AIR DRYER

A. High Speed Surface-Mounted ADA Compliant Hand Dryer (Tag P): Surface-mounted hand dryer shall have an aluminum cover with a stainless steel cover with satin finish. Hand dryer shall include a universal brush type motor (31,000 RPM). Dryer shall operate at 69 dB while delivering 42–64 CFM air flow velocity at 150–225 MPH (13,200–19,800 LFM). Dryer shall provide an exit ambient air temperature of 130°F at an ambient air temperature of 70°F. Dryer shall have global universal voltage, accepting 120–277 VAC input. Dryer shall have a total power of 950W (120V & 208–240V) and 1150W (277V). Dryer is equipped with a HEPA filter.

1. Basis of Design Product: Bradley Model 2923-287401 or equal.

2.8 ADULT/SPECIAL NEEDS DIAPER CHANGING STATION

A. Horizontal, Wall-Mounted Unit (Tag N): Wall-mounted diaper-changing station with 16 gauge Type 304 stainless steel exterior finish and vacuum formed replaceable polystyrene changing surface. Provide built-in liner dispenser and reinforced steel mounting plates and mounting hardware. Provide unit with pneumatic shock-absorbing operating mechanism, and safety strap. 400 lb. Load rating. Unit complies with ASTM F 2285-04 Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use .

1. Basis of Design Product: Model 100SSE-SM Horizontal Surface Mount by Foundations Worldwide, Inc., or equal.
2. Provide flange for surface mounting; Model 100SSE-SM

2.9 HOOKS

A. Double Coat/Robe Hook (Tag W): Hook and bumper type fabricated from forged or cast brass, nickel-plated with highly polished chrome finish, surface mounted.

1. Basis of Design Product: Provide Bradley Model 915 or equal.

2.10 FABRICATION

A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating manufacturer’s name and product number

B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

C. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six (6) keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer’s written instructions for type of substrate involved.

C. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446, and in compliance with ADA Regulations.

D. Adult/Special Needs Diaper Changing Table: Mount to wall in accordance with manufacturer's directions to support loading capacity.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for unencumbered, smooth operation. Verify that mechanisms function smoothly. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations after removing temporary labels and protective coatings.

END OF SECTION 102800

SECTION 105200 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Portable fire extinguishers.
2. Fire-protection cabinets for portable fire extinguishers.
3. Fire-protection accessories.

1.2 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection specialties.

1. Fire Extinguishers: Include rating and classification.
2. Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Standard for Portable Fire Extinguishers."

C. NYS Fire Code Compliance: Fabricate and label fire extinguishers to comply with New York State Fire Code.

D. Fire Extinguishers: FM listed and labeled for type, rating, and classification specified.

E. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements of ASTM E 814 for fire-resistance rating of walls where they are installed

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. J.L. Industries, Inc.
2. Kidde: Walter Kidde, The Fire Extinguisher Co.

3. Larsen's Manufacturing Company.
4. Potter-Roemer; Div. of Smith Industries, Inc.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: Carbon steel, complying with ASTM A 366/A 366M, commercial quality, stretcher leveled, temper rolled.

B. Stainless-Steel Sheet: ASTM A 666, Type 304.

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

B. Multipurpose Dry-Chemical Type: UL-rated 3-A:40-B:C, 5-lb nominal capacity, in enameled-steel container.

1. Available Product: Cosmic 5E, Activar/JL Industries
2. Location: Provide for general use, not in the kitchen.

C. Wet-Chemical Type: UL-rated 2-A:K, 1.6-gal. (6-L) nominal capacity, with potassium acetate-based, low PH agent in stainless steel container; with pressure-indicating gage.

1. Available Product: WC-6L, Larsen’s Manufacturing Company.
2. Location: Provide in Kitchen/cooking areas

2.4 FIRE-PROTECTION CABINETS

A. General: Provide for ABC fire extinguishers.

B. Basis-of-Design Product: Ambassador Steel Fire Extinguisher Cabinet Model 1015, as manufactured by Activar/JL Industries or approved equivalent product by one of the following:

1. Kidde Fyrnetics.
2. Larsen’s Manufacturing Co.
3. Potter Roemer; Div. of Smith Industries, Inc.

C. Cabinet Construction: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

1. Fire-Rated Cabinets: Listed and labeled to meet requirements of ASTM E 814 for fire-resistance rating of wall where it is installed.
   a. Construct fire-rated cabinets with double walls fabricated from 0.0478 inch (1.2 mm) thick, cold-rolled steel sheet lined with minimum 5/8 inch (16 mm) thick, fire-barrier material.
   b. Provide factory-drilled mounting holes.

D. Cabinet Size: Suitable for specified fire extinguisher.

E. Cabinet Style: Flat, 3/8 trim, overlapping wall finish.

F. Cabinet Construction: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

1. Cabinet Material: Enameled-steel sheet.
2. Recessed Cabinet: Cabinet box fully recessed in walls of depth indicated; with exposed flange overlapping surrounding wall surface.

G. Door Construction: Fabricate doors according to manufacturer's standards, of materials indicated, and coordinated with cabinet types and trim styles selected.

1. Door Material: Seel sheet
2. Door Style: Vertical duo.
3. Glazing: Clear acrylic
4. Door Hardware: Ensure hardware meets ADA requirements. Provide manufacturer's built-in cylinder lock system (*Larsen-Loc*™), or approved equivalent, and door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or exposed or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 degrees.
5. Lettering: Provide factory applied lettering in red, vertical orientation, that reads “Fire Extinguisher.”

2.5 ACCESSORIES

A. Mounting Brackets: Manufacturer's standard steel, designed to secure extinguisher, of sizes required for types and capacities of extinguishers indicated, with plated or baked-enamel finish. Provide brackets for extinguishers not located in cabinets.

B. Identification: Provide lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to wall surface.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.

D. Steel Finishes:

1. Manufacturer’s standard baked-enamel paint in color selected by Architect for the interior of cabinet.
2. White powder coated finish for door and trim.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for hose valves, hose racks, and cabinets to verify actual locations of piping connections before cabinet installation.

B. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets are to be installed.

C. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged units.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing fire-protection specialties.

B. Install in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

1. Prepare recesses for cabinets as required by type and size of cabinet and trim style.
2. Fasten mounting brackets to structure, square and plumb.
3. Fasten cabinets to structure, square and plumb.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust cabinet doors that do not swing or operate freely.

B. Refinish or replace cabinets and doors damaged during installation.

C. Provide final protection and maintain conditions that ensure that cabinets and doors are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 105200

SECTION 105213 - AUTOMATED EXTERNAL DEFIBRILLATOR (AED) SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cabinets for Automated External Defibrillator (AED) unit.

1.2 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for AED specialties.

1. Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain AED cabinets through one source from a single manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: Carbon steel, complying with ASTM A 366/A 366M, commercial quality, stretcher leveled, temper rolled.

2.2 AED CABINETS

A. Basis-of-Design Product: 1400 Series AED Cabinet as manufactured by JL Industries, Inc. or an approved equivalent product by one of the following:

1. Allied Medical Products
2. Phillips Healthcare.
3. Physio-Control
4. ZOLL Medical.

B. Cabinet Construction: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

1. Cabinet Size: Suitable for any size AED unit.
2. Cabinet Style: Exposed one-piece trim and door frame.
3. Cabinet Material: Enameled-steel sheet.

4. Semi-Recessed Cabinet: Semi-recessed cabinet partially concealed in walls, with 2-1/2" or 3" rolled edge trim overlapping wall surface.

C. Door Construction: Fabricate doors according to manufacturer's standards, of materials indicated, and coordinated with cabinet types and trim styles selected.

1. Door Material: Enameled-steel sheet.
2. Door Style: Full acrylic or tempered glass glazing with pull handle and AED graphics on door.

D. Accessories: Provide the following:

1. Audible alarm 85dba, powered by 9 volt battery. Provide with on/off switch
2. Strobe light, powered by 9 volt battery, built-in to cabinet or mounted above cabinet as required by field conditions.

2.3 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.

D. Steel Finishes: Manufacturer’s standard baked-enamel paint in color selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets are to be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing AED specialties.

B. Install in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

1. Prepare recesses for cabinets as required by type and size of cabinet and trim style.
2. Fasten cabinets to structure, square and plumb.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust cabinet doors that do not swing or operate freely.

B. Refinish or replace cabinets and doors damaged during installation.

C. Provide final protection and maintain conditions that ensure that cabinets and doors are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 105213

SECTION 114900 - GYMNASIUM EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following gymnasium equipment:

1. Gymnasium divider curtain.
2. Wall protection mats.

1.2 ACTION SUBMITTALS

A. Product data for each type of gymnasium equipment, including manufacturer's specifications, assembly and installation instructions, and maintenance recommendations.

B. Shop drawings indicating layout of gymnasium equipment coordinated with field measurements, connections and relationship to adjoining work, accessories, types of materials, and finishes.

C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors and textures available for each exposed material involving such selections.

D. Samples for verification of the following:

1. 12-inch square pieces of wall protection mat fabric
2. 12-inch square pieces of curtain fabric.

1.3 INFORMATIONAL SUBMITTALS

A. Operating and maintenance data

B. Qualification data for firms and persons specified in "Quality Assurance" Article.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer to perform unit of work of this section who has specialized in the installation of types of gymnasium equipment required for this project and who is acceptable to, or certified by, manufacturer of the equipment.

B. Source Quality Control: Provide each type of gymnasium equipment and related accessories by a single manufacturer.

1.5 PROJECT CONDITIONS

A. Field Measurements: Check actual dimensions of construction affecting gymnasium equipment by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication of equipment without field measurements.

1.6 WARRANTY

A. General: Warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace gymnasium equipment that fails in materials or workmanship within the specified warranty period as follows:

1. Gymnasium Divider Curtain: One year on vinyl and five years on structure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering gymnasium equipment which may be incorporated in the work include, but are not limited to, the following:

1. Draper Inc.
2. Gared Sports
3. Jaypro Sports, LLC.
4. Porter Athletic Equipment Company.

2.2 GYMNASIUM DIVIDER CURTAIN

A. Manual, Walk Draw Gymnasium Divider Curtain (DIV): Manually operated, horizontal pull type gymnasium divider including clamps for attachment to building structure, and other components required for complete functional installation.

1. Operation: Curtain suspended from overhead track and manually pulled open and closed while walking.
2. Configuration: Two (2) curtains arranged in a straight line shape as indicated on Drawings. Curtains to be bi-parting with 3 feet overlap at opening.
   a. Stack space for curtain shall not exceed 1-1/8 inches per carrier.
   b. Minimum required clearance for curtain on each side of track: 6 inches.

3. Track: 16 gage galvanized steel channel-type track 1-1/2 by 1-1/4 inches attached to structural support with beam clamps and hanger brackets at maximum 8'-0" on center.
4. Curtain:
   a. Bottom 96” of curtain shall be 19 oz. solid vinyl polyester reinforced, fire retardant (meeting ASTM E-84 Class A rating with 25 Flame Spread and 450 Smoke Development as well as NFPA-701) and mildew resistant vinyl fabric. All seams shall be electronically welded with a full contact weld that fuses the material together for superior strength.
      1) Vinyl Color: Navy Blue.

   b. Upper section of curtain shall be 9 oz. vinyl coated polyester mesh. The top hem shall be a double thickness of mesh reinforced with a vinyl strip. Grommets shall be attached along the vinyl strip and located 12" on center for attachment to carrier assemblies.
      1) Mesh Color: White

   c. Curtain bottom shall be weighted with No. 2/0 coil proof chain in curtain pocket.
   d. Curtain shall stop 2" above the finish floor. The curtain fabric shall be 10% longer than the curtain opening.

5. Attachment: Attach to structural support with beam clamps, hanger brackets, and 1/2 inch diameter threaded rods. Attachment clamps designed to be capable of supporting a minimum of 5,000 lbs each and provided in sufficient number to provide a combined minimum 45:1 attachment point safety factor.
6. Carriers: Intermediate carrier assemblies shall have two 1" diameter nylon wheels spaced on 12" centers. A (4) wheel trolley, constructed with 1” steel wheels and ball bearings, shall be used as the carrier on each end. Carriers shall attach to grommets in curtain top. Space carriers at 12 inches.
7. Tow Rope: A 1/4" polyester tow rope to operate the curtain shall be supplied.
8. Tie Back Strap: Provide Curtain tie back strap Model 4019.
9. Basis of Design Product: Walk-Draw Gym Divider Model 4013 as manufactured by Gared Performance Sports Systems, or equal.

2.3 WALL PROTECTION MATS

A. Basis of Design Product (PAD1): Model 4132 Class A, Extra-Firm Fire Retardant Gym Wall Pads by Gared Performance Sports Systems, or equivalent.

B. Wall protection mats shall consist of wall-mounted padded panels and all necessary support framing and accessories required to secure the system to the building walls, columns and doors.

   1. Wall pads shall conform to ASTM E84 Class A flame spread and smoke developed rating.

C. Wall Protection Mats: Bonded neoprene fire-retardant high impact foam filler padding cemented to min. 7/16" thick fire retardant OSB backing and covered with a minimum 14

oz. flame retardant polyester laminated vinyl fabric. Bull nose perimeter, and fold, wrap, and staple face fabric to the back of the backing. Provide wall pads without nailing flanges at perimeter.

D. Wall Mat Dimensions: 2" thick by 6'-0" high by 2'-0" wide, unless otherwise noted. Fabricate special panels for those wrapping corners, columns, or indicated to have non-standard shapes or configuration. Provide custom cut-outs for all wall-mounted electrical devices and other items indicated.

E. Anchors: Provide Z-clip wall attachment hardware for fastening pads to wall in a concealed manner.

F. Panel Fabric Color: Navy Blue.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for alignment of mounting substrates, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance.

1. Verify critical dimensions.
2. Examine supporting structure.
3. Examine wall assemblies, where reinforced to receive anchors and fasteners, to verify that locations of concealed reinforcements have been clearly marked. Locate reinforcements and mark locations.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Deliver gymnasium equipment to project site when spaces or building components which are to receive them have been completed.

1. Do not install wall protection mats until wall finishes have been installed or applied.

B. Install the gymnasium equipment in accordance with manufacturer's recommendations.

C. Coordinate with other trades (structural framing, wall finishes, electrical wiring and components) for associated work which needs to be completed or sequenced with the work of this Section.

D. Assemble/install gymnasium equipment in location shown or directed by Architect, and verify that components are complete and in proper working order.

E. Install wall pads by use of Z-clip anchors fastened to wall pads at top and bottom and at middle of wall pads, and corresponding locations on wall substrate Space pads apart as per manufacturer’s directions to allow for expansion and contraction

F. Gymnasium Dividers and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with court layout.

1. Verify clearances for movable components of gymnasium dividers throughout entire range of operation and for access to operating components.

G. Instruct Owner's designated personnel in proper handling, use, adjusting, and maintenance of units.

3.3 ADJUSTMENT AND CLEANING

A. Upon completion of installation, including work of other trades, lubricate, test, and adjust each gymnasium equipment to operate easily and in compliance with manufacturer's specifications.

B. Clean installed equipment on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensures that gymnasium equipment is without damage or deterioration at time of Substantial Completion.

END OF SECTION 114900

SECTION 116800 - PLAY EQUIPMENT AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes playground equipment as follows:

1. Freestanding playground equipment.

1.3 DEFINITIONS

A. Definitions in ASTM F1487 apply to Work of this Section.

B. IPEMA: International Play Equipment Manufacturers Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of playground equipment.

1. Include cuts sheets, plans, elevations, sections, and attachment details.
2. Include fall heights and use zones for playground equipment, coordinated with the critical-height values of protective surfacing specified in Section 321816.13 "Playground Protective Surfacing."
3. Include layout plans for playground equipment indicating their physical relationship between surrounding equipment and demonstrating that the equipment and their respective fall zones fits within the designated playground area.
4. Include color drawings indicating the color of each playground component.
5. Certification that playground components meet or exceed the requirements listed in specification under Quality Assurances A and D.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and Manufacturer.

1. Installer: shall be manufacturer trained and certified installer with at least 5 years of relevant experience. Submit certification and a list of 5 similar jobs installed within the last 2 years.

2. Manufacturer: Shall be a nationally recognized firm and been in business for at least 10 years.

B. Sample Warranty: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

C. Testing Agency Qualifications: An independent agency qualified according to ANSI Z34.1 for testing indicated.

D. Safety Standards: playground equipment shall comply with the following requirements and guidelines:

E. Public Playground Safety Handbook (**CPSC No. 325)**
   a. ASTM F1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.
   b. ASTM F2373 Standard Consumer Safety Performance Specification for Public Use Play Equipment for Children 6 Months through 23 Months.
   c. ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
   d. ASTM F2223 Standard Guide for ASTM Standards on Playground Surfacing.
   e. ASTM F2479 Standard Guide for Specification, Purchase, Installation and Maintenance of Poured-in-Place Playground Surfacing.
   f. ASTM F1951 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
   g. ASTM F1816 Standard Safety Specification for Drawstrings on Children’s Upper Outerwear.

1.8 WARRANTY

A. Existing Equipment:

1. The Contractor shall perform all work in a manner that preserves and does not adversely affect, void, or invalidate the existing playground equipment manufacturer's warranty or recommended standards.
2. Before removal, Contractor shall obtain written confirmation from the original equipment manufacturer that the proposed work will not affect the existing warranty.
3. If the manufacturer requires its authorized representative or installer to perform, supervise, inspect, or certify any portion of the work, the Contractor provide such services at no additional cost to the Owner.

B. New Equipment
1. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.
   a. Failures include, but are not limited to, the following:
      1) Structural failures.
      2) Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
   b. Warranty Period: Five years minimum for durable components from date of Substantial Completion.

1.9 Sequencing Existing Playground Equipment

A. Pre-removal inspection and documentation. Document any and all defects in the play equipment and provide photo evidence to the Owner's Representative.

B. Careful dismantle equipment. Cut, remove, and dispose of posts.

C. Inventory, label, and inspect salvaged equipment.

D. Transport and store equipment in a manner that avoids damage and detioration.

E. When construction schedule and phasing allows, and upon approval by Owner's Representative, prepare new foundations and anchorage.

F. Reinspect salvaged equipment prior to installation.

G. Reinstall new posts, hardware, and salvaged equipment per the manufacturer's standards and procedures.

H. Correct deficiencies and conditions that would prevent full, safe use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain playground equipment from single source from single manufacturer. All new equipment shall be compatible with existing equipment and

shall not void, invalidate, or adversely affect the existing playground equipment warranty.

B. Existing play equipment is by Landscape Structures.

C. Playground equipment and components shall have the IPEMA Certification Seal.

2.2 PERFORMANCE REQUIREMENTS

A. Safety Standard: Provide playground equipment according to ASTM F1487 and CPSC No. 325

2.3 PLAYGROUND EQUIPMENT

A. New posts shall be specifically compatible with the existing playground equipment.

B. Posts shall be designed and manufactured for the specific equipment, model, configuration, loading, and intended application.

C. Generic or field-fabricated posts shall not be used.

D. All new posts, connectors, brackets, fasteners, anchors, and related hardware shall be compatible with the existing equipment and shall provide a complete installation meeting the manufacturer's requirements.

E. New hardware shall be corrosion-resistant and suitable for exterior playground use meeting all applicable standards.

F. All new posts and hardware shall match existing colors or be approved by the Owner's Representative prior to installation.

2.4 PLAYGROUND EQUIPMENT – NEW

A. Basis of Design: Landscape Structures, Inc. all color as selected by owner from manufacturer's full range. Products are as follows:
   1. We-Go-round, model #248819 with three benches.
   2. Color Splash Panel, model #177715
   3. Marble Panel, model #173581
   4. Rain Sound Wheel Panel, model #177719

PART 3 - EXECUTION

3.1 REMOVAL

A. Remove equipment carefully to prevent damage to components for reuse.

B. Contractor shall coordinate removal operations so that equipment is dismantled in a manner consistent with the manufacturer's installation and disassembly requirements.

C. Prior to removal, the Contractor shall identify and label components as necessary to facilitate accurate future reinstallation.

D. Existing play equipment posts and associated hardware shall be removed and disposed of. Remove and dispose of all below-grade foundations.

E. Protect all salvaged equipment from damage during dismantling, handling, transportation, and storage.

3.2 STORAGE

A. Store salvaged equipment in a secure, dry, weather-protected location suitable for long-term storage.

B. Equipment shall not be stored in a manner that allows water, excessive moisture accumulation, or contact with corrosive materials.

C. The Contractor shall periodically inspect stored equipment and notify the Owner of any damage, deterioration, loss, or missing components.

D. The Contractor shall be responsible for the stored equipment while it's in the Contractor's possession or control and replace any damaged or missing components.

3.3 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer and Owner's Representative present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading and drainage components required for placing playground equipment and protective surfacing is completed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Examine salvaged equipment prior to installation. Salvaged equipment that has been damaged during removal and/or storage operations shall be replaced at no cost to the Owner.

3.4 INSTALLATION

A. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.

1. Maximum Equipment Height: Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.

B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil. Verify that behind or beneath each component location there are no utility lines, or other buried infrastructure elements, that will be affected by installation of equipment or signs. Any damage during installation of equipment or signs to utilities, or other buried infrastructure will be the sole responsibility of the Contractor to correct and repair.

C. Post Set with Concrete Footing: Comply with Section 033000 "Cast-in-Place Concrete".

1. Set equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.

a. Place concrete around posts and vibrate/tamp for consolidation. Secure posts during placement and finishing work until footing is sufficiently cured.

2. Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.
3. Finishing Footings: Smooth top, and shape to shed water.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall engage a qualified testing agency certified by the manufacturer to perform tests and inspections.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Perform inspection and testing for each type of installed playground equipment according to ASTM F1487.

2. Make any adjustments required to achieve compliance and submit certification to that effect prior to closeout.

C. Playground equipment items will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

E. Notify Owner’s Representative 48 hours in advance of date(s) and time(s) of testing and inspection.

END OF SECTION 116800

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes

1. Manual operation light-filtering shades.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

B. Shop Drawings: Show location and extent of roller shades. Include elevations, sections, details, and dimensions not shown in Product Data. Show installation details, mountings, attachments to other Work, operational clearances, and relationship to adjoining work.

C. Samples for Verification:

1. Shade Material: Not less than 12-inch- (300-mm-) square section of fabric, from dye lot used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of material.

D. Window Treatment Schedule: Include roller shades in schedule using same room designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals. Include the following:

1. Methods for maintaining roller shades and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
3. Operating hardware.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed installation of roller shades similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance

B. Source Limitations: Obtain roller shades through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Passes NFPA 701.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. Build mockups of in-place full-size window shade unit in the location as directed by Architect.
2. Provide one mock-up for each type of window shade fabric provided in the Work.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range.

1.7 WARRANTY

A. Shadecloth: Manufacturer's standard non-depreciating twenty-five year limited warranty.

PART 2 - PRODUCTS MANUFACTURERS

A. Basis of Design Manufacturer: Provide specified shade systems by MechoShade System, Inc. or equivalent by one of the following:

1. Draper Shade & Screen Co., Inc.
2. Hunter Douglas Window Fashions.
3. Levolor Contract; a Newell Company; Joanna

4. Silent Gliss USA, Inc

2.2 BASIS OF DESIGN PRODUCTS

A. Manual Single-Roll Shades (WT1): Provide Classic Mecho/5 Manual System by MechoShade or equal.

2.3 MATERIALS

A. Glare Control Fabric, 3% Open Mesh Type (WT1): 100% thermoplastic olefin (TPO) basket-weave design; EcoVeil 1550 Series by MechoShade, or equal.

1. Color: Silver Birch.

B. Brackets: Plated steel, with adequate projection to clear all window fixtures

C. Aluminum Extrusions: Alloy and temper recommended by manufacturer for use intended and as required for proper application of finish indicated but not less than the strength and durability properties specified in ASTM B 221 for 6063-T5.

2.4 FABRICATION

A. Product Description: Roller shade consisting of a roller, a means of supporting the roller, a flexible sheet or band of material carried by the roller, a means of attaching the material to the roller, a bottom bar, and an operating mechanism that lifts and lowers the shade

B. Components: Noncorrosive, self-lubricating materials.

C. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets; with manufacturer's standard method for attaching shade material.

D. Direction of Roll: Regular, from back of roller.

E. Mounting Brackets:

1. Single Roll Shades: Galvanized or zinc-plated steel, style for between jamb mounting unless otherwise indicated.

F. Fascia: L-shaped, formed-steel sheet or extruded aluminum; long edges returned or rolled; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; length as required for between the jambs mounting; removable design for access

G. Bottom Bar: Steel or extruded aluminum, with plastic or metal capped ends. Provide concealed, by pocket of shade material, internal-type bottom bar with concealed weight bar as required for smooth, properly balanced shade operation.

H. Manual Shade Operation: Bead chain clutch operator.

1. Bead Chain Material: #10 stainless steel chain with 120 lb. breaking strength.
2. Operator Location: On left or right side of shade as directed by Architect for each location.

I. Shade Units: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Shade Units Installed between (Inside) Jambs: Edge of shade not more than 1/4 inch (6 mm) from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.
2. Shade Units Installed Outside Jambs: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

J. Installation Fasteners: Fabricated from metal that is noncorrosive to shade hardware and adjoining construction and to support shades as required by manufacturer's written instructions.

K. Color-Coated Finish: For metal components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

L. Colors of Metal and Plastic Components Exposed to View: As selected by Architect from manufacturer's full range unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow clearances for window operation hardware.

B. Install metal parts isolated from concrete or mortar to prevent corrosion.

C. Install mounting brackets with not less than 2 fasteners per bracket.

D. Coordinate installation of roller shades with placement of interior sign on wall adjacent to rescue windows so that the rescue window is clearly indicated from the interior in the event that the shade is closed.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413

SECTION 133123 - TENSIONED FABRIC STRUCTURES

PART 1 – GENERAL

1.1 SUMMARY

A. The shade structure contractor shall be responsible for the design, engineering, fabrication, supply and installation of the work specified here in. The intent of this specification is to have only one single contractor be responsible for all the above functions.

1.2 SUBMITTALS

A. Provide proof of installed reference sites with structures of similar scope of project and installation that are engineered to IBC specifications. Include in reference list of structure dimensions with install date and project location.

B. Samples for Initial Selection: Manufacturer's samples to demonstrate fabric color range and powder coat paint color selections.

C. Shop Drawings: Detailing materials and methods of construction, and installation methods

1. Provide signed and sealed calculations by professional engineer licensed in jurisdiction where shade structure is located, demonstrating compliance with performance criteria specified.

1.3 QUALITY ASSURANCE

A. A single shade contractor shall design, engineer, manufacture, and erect the shade structure(s).

B. Fabricator/Installer shall have minimum 15 years' experience in the design, engineering, manufacturing, and installation of shade structures.

C. All structures shall be engineered to comply with NYS Building code.

D. Fabricator shall have an in-house warranty and service department to assist in repairs and service calls.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for the shade structure(s) shown on the project drawings in relation to the property survey and existing structures, and verify locations by field measurements prior to construction for the shade structures.

1.5 WARRANTY

A. Installer: Provide a 12-month warranty on all labor and materials.

B. Manufacturer: A limited warranty shall be provided for 20 years Non-Prorated against Structural Integrity of the steel components and 10 years Prorated on the fabric canopy(s).

PART 2 – PRODUCTS

2.1 GENERAL

A. Shade Structure: Provide cantilever single post pyramid shaped sun shade structure fabricated with a single, offset powder coated steel post and UV filtering shade material. Product shall be modular and pre-fabricated, and include the structural steel frame, fabric roof, steel cables and all fasteners.

B. Performance Characteristics: Engineer the shade structure to meet the following minimum requirements:

1. Wind rating: 140 mph
2. Snow load: 27psf for 8/10-ft entry, 26 psf for 12-ft entry, 24 psf for 14-ft entry
3. Product shall be engineered to meet all current IBC-based building codes

C. Shade Fabric: Designed to block up to 97 percent of the sun's UV rays and keep temperatures up to 30 degrees cooler. Fabricated from knitted mid-duty HDPE fabric, lead and phthalate free, fire-resistant and certified to the California Fire Marshall standard for flame resistance, conforming to the following standards.
1. ASTM E-84: Class A
2. CSFM 127.1 Title 19: Certified
3. NFPA 701: Conforms

D. Shade Fabrication: Reinforce all corners with 16-ounce non-tear vinyl and all pockets with protective webbing where steel cable enters and exits.

E. Steel Tubing: All fabricated steel must be in accordance with approved shop drawings and calculations.
1. Structural steel tubing shall be galvanized.
2. All non-hollow structural shapes comply with ASTM A-36, unless otherwise noted.
3. All hollow structural steel shapes shall be cold formed HSS ASTM A-53 grade C, unless otherwise noted.
4. Plate products shall comply with ASTM A-36.

F. Powder Coating: ProShield® finish combines a specially formulated primer with a high-quality, architectural-grade, Super-Durable, TGIC polyester-powdercoat.

G. Welding: All shop welds shall be executed in accordance with the latest edition of the American Welding Society Specifications the AWS D1.1-AWS Structural Welding Code-Steel.

H. Installation Hardware: Bolt and fastening hardware shall be determined based on calculated engineering loads

I. Basis of Design Product: Provide SkyWays Cantilever Single Post Pyramid Shade by Landscape Structures in 16’ x 16’ size, entry height as indicated on Drawings, and fabric and metal framing colors as selected by Architect.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Installations of shade structure(s) shall be performed by an installer who shall follow the manufacturer’s instructions for assembly, installation, and erection, per approved drawings.

B. Concrete: Concrete work shall be executed in accordance with the latest edition of American Concrete Building Code ACI 318 unless specified by the governing municipality. Comply with Section 033000 and requirements on Drawings.
   1. Footing shall be placed in accordance with and conform to engineered specifications and drawings.

C. Assemble shade structure in conformance with approved shop drawings. Securely connect components and adjust as required.

END OF SECTION

SECTION 142100 - ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes electric traction passenger elevators.

B. Related Sections include the following:

1. Division 03 Section for setting sleeves, inserts, and anchoring devices in concrete.
2. Division 04 Section for setting sleeves, inserts, and anchoring devices in masonry.
3. Division 05 Sections for the following:
    a. Attachment plates, angle brackets, and other preparation of structural steel for fastening guide-rail brackets.
    b. Machine beams.
    c. Structural-steel shapes for subsills and entrance frames that are part of steel frame.
    d. Pit ladders.
4. Division 09 Sections for finish flooring in elevator cars.
5. Division 26 Section for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.
6. Division 26 Section for telephone service to elevators.
7. Division 26 Sections for electrical service for elevators to and including fused disconnect switches at machine room door and standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller.
8. Division 28 Sections for access control and security cameras.

1.2 DEFINITIONS

A. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.3 SUBMITTALS

A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for the following:

1. Car enclosures and hoistway entrances.
2. Operation, control, and signal systems
3. Two-way communication system

B. Shop Drawings: Show plans, elevations, sections, and large-scale details indicating service at each landing, machine room layout, coordination with building structure, relationships with other construction, and locations of equipment and signals. . Include large-scale layout of car control station and standby power operation control panel. Indicate variations from specified requirements, maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.

1. Include wiring diagram detailing wiring for power, signal and control systems differentiating clearly between manufacturer-installed wiring and field-installed wiring. Indicate maximum and average power demands

C. Samples: For exposed finishes of cars, hoistway doors and frames, and signal equipment; 3-inch- (75-mm-) square samples of sheet materials; and 4-inch (100-mm) lengths of running trim members.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service, including emergency generator, as shown and specified, are adequate for elevator system being provided.

B. Maintenance Manuals: Include operation and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information. Include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel. Submit for Owner's information at Project closeout.

C. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

D. Qualification Data: For Installer

E. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Elevator manufacturer or an experienced installer approved by elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Regulatory Requirements: In addition to local governing regulations, comply with applicable provisions in ASME A17.1, "Safety Code for Elevators and Escalators" and Building Code of New York State.

C. Accessibility Requirements: In addition to local governing regulations, comply with ANSI A117.1 - 2017.

D. NFPA: Comply with applicable NFPA codes, and specifically with sections relating to electrical work and elevators.

E. Fire-Rated Door Assemblies: Door and frame assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252.

F. Design Criteria: The drawings and specifications indicate the cab clear inside dimensions, motor horsepower and hoistway dimensional requirements and other requirements of the electric traction elevator, and are based on the specific types and models indicated. Electric traction elevators by other manufacturers may be considered, provided deviations in dimensions are minor, and do not change the hoistway dimensions. Motor horsepower must be less than or equal to that specified or the proposer shall pay all costs associated with increasing electrical service to elevator as necessary. The burden of proof of equality is on the proposer.

G. As a part of final acceptance of the project, the Contractor shall have a Qualified Elevator Inspector (QEI) conduct a full Acceptance Inspection and Test in accordance with ASME/ANSI A17.1 before final acceptance by the Owner. The Contractor shall obtain from the elevator contractor and/or manufacturer and furnish to the Owner all data affecting the elevator installation or modification, including ‘as-installed’ circuit and control wiring diagrams and maintenance manuals.

1.6 COORDINATION

A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Coordinate locations and dimensions of other work relating to electric traction elevators including pit ladders, sumps, and floor drains in pits; entrance subsills; and electrical service, electrical outlets, lights, and switches in pits and machine rooms.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Written warranty, signed by manufacturer agreeing to repair, restore, or replace defective elevator work within specified warranty period.

1. Warranty Period: 12 months from date of Acceptance.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Acceptance, provide 12 months' full maintenance service by skilled employees of the elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated

speed and capacity. Provide parts and supplies as used in the manufacture and installation of original equipment.

1. Perform maintenance, during normal working hours.
2. Provide emergency 24-hour callback service.
    a. Response Time: Two hours or less.

B. Continuing Maintenance Proposal: Provide a continuing maintenance proposal from Installer to Owner in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Provide specified products of Otis or equivalent elevator manufactured by KONE or ThyssenKrupp.

2.2 MATERIALS AND COMPONENTS

A. General: Provide manufacturer's standard elevator systems. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard preengineered elevator systems and as required for a complete system.

1. Provide machine-room-less type elevator with controllers located in separate control room adjacent to elevators.

B. Passenger Elevator Machines: Provide variable-voltage, variable-frequency ac-type hoisting machines. Provide solid-state power converters.

1. Provide energy-efficient machine with permanent magnet synchronous motor, dual solenoid service and emergency brakes, mounted to the car guide rail at the top of the hoistway.
2. Provide regenerative drive system.

C. Coated Steel Belts: Polyurethane coated belts with high-tensile-grade, zinc-plated steel cords and a flat profile on the running surface and the backside of the belt. All driving sheaves and deflector sheaves should have a crowned profile to ensure center tracking of the belts. A continuous 24/7 monitoring system using resistance based technology has to be installed to continuously monitor the integrity of the coated steel belts and provide advanced notice of belt wear

D. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work where installation of devices is specified in another Specification Section.

E. Guide Rails and Attachments: Guide rails shall be Tee-section steel rails with brackets and fasteners. Side counterweight arrangements shall have a dual-purpose bracket that combines both counterweight guide rails, and one of the car guide rails to building fastening

F. Car Frame and Platform: Welded steel units.

G. Finish Materials: Provide the following materials and finishes for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment as indicated:

1. Satin Stainless Steel: ASTM A 666, Type 304, with No. 4, directional satin finish.
2. Enameled-Steel Sheet: Cold-rolled steel sheet complying with ASTM A 366/A 366M, matte finish, stretcher-leveled standard of flatness. Provide with factory-applied enamel finish; colors as selected by Architect.
3. Prime-Painted Steel Sheet: Cold-rolled steel sheet, ASTM A 366/A 366M, or hot-rolled steel sheet, ASTM A 569/A 569M, with factory-applied rust-inhibitive primer.
4. Plastic Laminate: High-pressure type complying with NEMA LD 3, Type GP-50; color, texture, and pattern as scheduled.

2.3 OPERATION SYSTEMS

A. Passenger Elevators: Provide manufacturer's standard microprocessor operation system for each elevator or group of elevators as required to provide type of operation system indicated.

1. Single Elevator: Provide "selective collective automatic operation" as defined in ASME A17.1.

B. Auxiliary Operations: In addition to primary operation system features, provide the following operational features for elevators where indicated

1. Loaded-Car Bypass: When car load exceeds a predetermined weight, car will respond only to car calls, not to hall calls. Predetermined weight can be adjusted.
2. Automatic Dispatching of Loaded Car: When car load exceeds a predetermined weight, doors will begin closing.
3. Nuisance Call Cancel: When car calls exceed a preset number while the car load is less than a predetermined weight, all car calls are canceled. Preset number of calls and predetermined weight can be adjusted.
4. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for overtravel or undertravel. Self-leveling shall, within its zone, be automatic and independent of the operating device. Maintain the car approximately level with the landing irrespective of its load
5. Independent Service: Keyswitch in car control station removes car from group operation and allows it to respond only to car calls. Key cannot be removed from keyswitch when car is in independent service. When in independent service, doors close only in response to the door close button.

6. Automatic emergency recall and fire fighter's emergency service (Phase I fire service and Phase II car fire service in accordance with ASME A17.1);
   a. Elevator 1 and 2: Return to ground floor(designated floor), with alternate floor the First Floor.

7. Controls for emergency operation shall be located in each car.
8. Access at bottom landing with zoning.
9. Access at top landing with zoning.

2.4 SIGNAL EQUIPMENT

A. General: Provide signal equipment for each elevator or group of elevators with hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements of acrylic or other permanent, non-yellowing translucent plastic.

B. Car Control Stations: Provide manufacturer's standard semirecessed or fully recessed car control stations. Mount in return panel adjacent to car door, if not otherwise indicated.

1. Include call buttons for each landing served and other buttons, switches, and controls required for specified car operation.
2. Mark buttons and switches with manufacturer's standard identification for required use or function that complies with ASME A17.1.
3. Mount controls at heights complying with ANSI A117.1- 2017.

C. Emergency Communication System: Provide system that complies with ASME A17.1 and ANSI A117.1-2017. On activation, system dials preprogrammed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.

D. Emergency Two-Way Communication System for the Deaf, Hard of Hearing and Speech Impaired: Provide two-way communication system that provides visible text and audible modes that provides the following:

1. When operating in each mode, includes a live interactive system that allows back and forth conversation between the elevator occupants and emergency personnel.
2. Is operational when the elevator is operational.
3. Allows elevator occupants to select the text-based or audible mode depending on their communication needs to interact with emergency personnel.

E. Car Position Indicator: For passenger elevator cars, provide illuminated-signal type, digital-display type, or segmented type, located above car door or above car control station. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.

1. Include travel direction arrows if not provided in car control station.

F. Hall Push-Button Stations: Push-Button-Operated face plate flush with wall surface. Provide units with direction-indicating buttons; two buttons at intermediate landings; one button at terminal landings.

1. Firefighters Phase I key switch shall be located at Ground Floor.

G. Combination Hall Lanterns/Hall Position Indicators: Provide illuminated-signal type or digital-display type, located above each hoistway entrance. Provide units with illuminated arrows, but provide single arrow at terminal landings.

1. Provide units with flat faceplate for mounting with body of unit recessed in wall and with illuminated elements projecting from faceplate for ease of angular viewing.
2. With each lantern, provide audible signals indicating car arrival and direction of travel, including floor passing signal.

H. Corridor Call Station Pictograph Signs: Provide signs matching hall push-button stations with text and graphics according to ASME A17.1, Figure 2.27.9.

I. Fireman’s Warning Signal (Third Signal): Provide illuminated fireman’s hat which shall light in the event a fire is detected in the elevator machine room or hoistway per NFPA 72-6.15.3.9 and ASME A17.1-2.27.3.2.6.

J. Controllers: Provide contact points in the controllers for fire alarm system interface.

K. Standby Power Elevator Selector Switches: Provide switches, as required by ASME A17.1, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed. For each elevator, provide illuminated signals that indicate when they are operational and when they are at the designated emergency return level with doors open.

2.5 DOOR REOPENING DEVICES

A. Infrared Array: Provide door reopening devices with a uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more of the light beams shall cause doors to stop and reopen.

1. Nudging Feature: After car doors are prevented from closing for a predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

2.6 ELEVATOR MONITORING SYSTEM

A. Remote Elevator Monitoring: Provide microprocessor controlled system that allows remote monitoring of elevators for maintenance needs and repair requests.

2.7 PASSENGER ELEVATOR CAR ENCLOSURES

A. General: Provide manufacturer's standard steel-framed car enclosures with nonremovable wall panels as required for wall panel finish specified, suspended ceiling,

trim, accessories, access doors, doors, power door operators, sills (thresholds), lighting, and ventilation.

1. Stainless Steel: ASTM A 167, Type 302 or 304, with No. 4 satin finish.
2. Sills: Extruded aluminum, with grooved surface, 1/4 inch thickness, mill finish.
3. Wall Panels: Plastic laminate panels, in color and pattern as scheduled.
4. Fabricate car door frame integrally with front wall of car in stainless steel.
5. Fabricate car with recesses and cutouts for signal equipment.
6. Car Doors: Satin finish stainless steel doors.
7. Luminous Ceiling: Brushed stainless steel finish dropped ceiling with 6 round LED lights.
8. Flooring: By others as specified in Division 09 Section “Resilient Flooring and Accessories”.
9. Handrails: Satin stainless steel, flat, 2" x 1/2", at sides and rear walls.
10. Wall Protection Pads: Provide hooks and removable protection pads for interior of cab to completely cover walls, in color selected by Architect.

B. Emergency Light: Integrated emergency light in a module inclined 20 degrees from vertical, illuminating automatically upon loss of the building's normal power supply.

C. Top of Car Access: Provide top of car access door complying with ASME/ANSI A17.1.

D. Car Fan: Provide top of car ventilation fan, one-speed, with key-operated switch in car control station

2.8 PASSENGER HOISTWAY ENTRANCES

A. General: Provide manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Provide frame size and profile to coordinate with hoistway wall construction.

1. Where gypsum board wall construction is indicated, provide self-supporting frames with reinforced head sections.
2. Provide units bearing Underwriters' Laboratories "B" labels.
3. Comply with elevator manufacturer's requirements for elevator wall interface with hoistway entrance assembly.

B. Interlocks: Equip each hoistway entrance with an Underwriters' Laboratories "B" label approved type interlock tested as required by code. Design interlock to prevent operation of the car away from the landing until the doors are locked in the closed position as defined by code and prevent opening the doors at any landing from the corridor side unless the car is at rest at that landing or is in the leveling zone and stopping at that landing.

C. Materials and Fabrication: Provide manufacturer's standards but not less than the following:

1. Stainless-Steel Frames: Formed from stainless steel sheet, with satin finish.

2. Stainless-Steel Doors: Flush, hollow-metal construction, fabricated from stainless steel with satin finish.
3. Sills: Extruded aluminum, with grooved surface, 1/4 inch (6 mm) thickness, mill finish.
4. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

2.9 SIGNAGE

A. Provide signage complying with Safety Code for Elevators and Escalators (ASME A17.1), ANSI A117.1 - 2017 and the Building Code of New York State.

2.10 PASSENGER ELEVATORS

A. Elevator No. 1 (AB):

1. Type: One front and rear opening gearless traction elevator
2. Basis of Design Product: Otis Gen 3 Edge, or equal.
3. Rated Load: 2100 lb.
4. Rated Speed: 200 fpm.
5. Operation System: Simplex operation, microprocessor control.
6. Power Characteristics: 208V, 3 phase, 60 Hz.
7. Number of Stops: 5
8. Motor HP: 10
9. Auxiliary Operations:
    a. Loaded-car bypass.
    b. Automatic dispatching of loaded car.
    c. Nuisance call cancel.
    d. Access at top landing with zoning.
    e. Access at bottom landing with zoning.
    f. Earthquake Emergency Operation: Comply with requirements in ASME A17.1.
    g. Elevator shall be tied into building emergency power system.
    h. Automatic emergency recall and fire fighter's emergency service (Phase I fire service and Phase II car fire service in accordance with ASME A17.1); return to Ground Floor (designated floor), with alternate floor the First Floor.
    i. Options: Provide all optional features specified or as required for code compliance.

10. Car Enclosures: As follows:
    a. Inside Width: 5'-8-5/16"
    b. Inside Depth: 4'-4-1/8".
    c. Inside Height: 7'-9"
    d. Front Walls: Satin stainless steel with integral car door frames.
    e. Car Fixtures: Satin stainless steel.
    f. Car Walls: Plastic laminate panels, vertical orientation, in color selected by Architect.
    g. Door Faces (Interior): Satin stainless steel.
    h. Door Sills: Aluminum.

i. Ceiling: Satin finish dropped stainless steel ceiling with 6 round LED lights.
j. Handrails: Satin stainless steel, flat, 2" x 1/2", at sides and rear walls.
k. Floor: LVT-1. By others as specified in Division 09 Section “Resilient Flooring and Accessories.”
l. Ventilation: Fan.

11. Hoistway Entrances: As follows:
    a. Width: 3'-6"
    b. Height: 7'-0"
    c. Type: One speed side opening.
    d. Frames: Stainless steel.
    e. Doors: Stainless steel.
    f. Sills: Aluminum.

12. Hall Fixtures: Satin stainless steel
13. Additional Requirements: As follows:
    a. Provide inspection certificate in each car, mounted under acrylic cover with satin stainless-steel frame.
    b. Provide protective blanket studs on cab front and walls and one set of vinyl full-height protection pads in color selected by Architect.
    c. Provide inspection switch and car top inspection station.

B. Elevator No. 2 (BC):

1. Type: One front and rear opening gearless traction elevator
2. Basis of Design Product: Otis Gen 3 Edge, or equal.
3. Rated Load: 2100 lb.
4. Rated Speed: 200 fpm.
5. Operation System: Simplex operation, microprocessor control.
6. Power Characteristics: 208V, 3 phase, 60 Hz.
7. Number of Stops: 6
8. Motor HP: 10
9. Auxiliary Operations:
    a. Loaded-car bypass.
    b. Automatic dispatching of loaded car.
    c. Nuisance call cancel.
    d. Access at top landing with zoning.
    e. Access at bottom landing with zoning.
    f. Earthquake Emergency Operation: Comply with requirements in ASME A17.1.
    g. Elevator shall be tied into building emergency power system.
    h. Automatic emergency recall and fire fighter's emergency service (Phase I fire service and Phase II car fire service in accordance with ASME A17.1); return to Ground Floor (designated floor), with alternate floor the First Floor.
    i. Options: Provide all optional features specified or as required for code compliance.

10. Car Enclosures: As follows:
    a. Inside Width:5'-8-5/16"

b. Inside Depth: 4'-4-1/8"
c. Inside Height: 7'-9"
d. Front Walls: Satin stainless steel with integral car door frames.
e. Car Fixtures: Satin stainless steel.
f. Car Walls: Plastic laminate panels, vertical orientation, in color selected by Architect.
g. Door Faces (Interior): Satin stainless steel.
h. Door Sills: Aluminum.
i. Ceiling: Satin finish dropped stainless steel ceiling with 6 round LED lights.
j. Handrails: Satin stainless steel, flat, 2" x 1/2", at side walls.
k. Floor: LVT-1. By others as specified in Division 09 Section “Resilient Flooring and Accessories.”
l. Ventilation: Fan.

11. Hoistway Entrances: As follows:
    a. Width: 3'-6"
    b. Height: 7'-0"
    c. Type: One speed side opening.
    d. Frames: Stainless steel.
    e. Doors: Stainless steel.
    f. Sills: Aluminum.

12. Hall Fixtures: Satin stainless steel
13. Additional Requirements: As follows:
    a. Provide inspection certificate in each car, mounted under acrylic cover with satin stainless-steel frame.
    b. Provide protective blanket hooks on cab front and walls and one set of vinyl full-height protection pads in color selected by Architect.
    c. Provide inspection switch and car top inspection station.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Examine hoistways, hoistway openings, pits, and machine rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed. Proceed with installation only after unsatisfactory conditions have been corrected.

1. For the record, prepare a written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions.

1. Install hoistway frames according to NFPA 80

B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.

C. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to minimize transmission of vibrations to structure and thereby minimize structure-borne noise from elevator system.

D. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.

E. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

F. Leveling Tolerance: 1/8 inch (3 mm), up or down, regardless of load and direction of travel.

G. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

3.3 FIELD QUALITY CONTROL

A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1 and governing regulations and agencies. All tests shall be witnessed by a qualified elevator inspector (QEI) retained by the Owner.

B. Operating Test: Load elevators to rated capacity and operate continuously for 30 minutes over full travel distance, stopping at each level and proceeding immediately to the next. Record temperature rise of elevator machines during 30-minute test period. Record failure of elevators to perform as required.

1. Perform operating test specified above on one elevator of each type, capacity, speed, and travel distance.

C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

3.4 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operation, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of operational failure and other building emergencies. Train Owner's personnel in procedures to follow in identifying sources of operational failures or

malfunctions. Confer with Owner on requirements for a complete elevator maintenance program.

B. Make a final check of each elevator operation with Owner's personnel present and before date of Substantial Completion. Determine that operation systems and devices are functioning properly.

3.5 PROTECTION

A. Temporary Use: Do not use elevators for construction purposes unless cars are provided with temporary enclosures, either within finished cars or in place of finished cars, to protect finishes from damage.

1. Provide full maintenance service by skilled, competent employees of elevator Installer for elevators used for construction purposes. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Use same parts and supplies as used in the manufacture and installation of original equipment.
2. Provide protective coverings, barriers, devices, signs, and other procedures to protect elevators. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.
3. Provide services of an elevator operator to operate the elevator during construction for construction purposes once temporary enclosures are in place. Cost of operator’s services shall be bourne by Contractor.

END OF SECTION 142100